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ABSTRACT

A study was made of the impact of nonsexist toys and games on the occupational aspirations and attitudes of kindergarten and fourth-grade children. It was hypothesized that children who play with toys and games that suggest "non-sex-biased" career options would be less likely to hold to traditional occupational expectations. Children in twenty-three classrooms were exposed to the toys and games for four months. After this exposure, children in these classes were compared with children in eighteen control classrooms. Analysis of the kindergarten data indicated that the effects of region (urban or rural) and group (experimental or control) on the occupational choices were relatively slight. However, the sex differences were highly significant. When asked to draw a picture of what they could be when they grew up, boys selected male sex-typed occupations and girls selected female sex-typed occupations. As with the kindergarten children, but to a lesser extent, fourth-grade males and females seemed to be well aware of sex role expectations. While the data suggested that the toys and games had only a limited impact, various factors may have influenced the impact of the toys, and competing forms of sex-role socialization. (Appended are references, a list of the toys used, questionnaires, and other materials developed for the experiement.) (LMS)

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FINAL PROGRESS REPORT

THE INFLUENCE OF OCCUPATIONAL TOYS ON CAREER ASPIRATIONS

Pamela J. Riley
Patricia Powers

Utah State University
November, 1977

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CHAPTER ONE

INTRODUCTION

In recent years, much emphasis has been placed on the processes and implications of sex-role socialization. By far the majority of writers agree that the process of learning to play roles begins at a very early age. Such roles are transmitted through all major agents of socialization—i.e., parents, peers, institutions and various forms of media. Because of the importance of the educational institution as a socializing agent during childhood, a significant proportion of recent sex-role research has focused on the influence of children's textbooks and fiction on the development of sex roles (e.g., Oliver, 1974; Mitchell, 1973; Women on Words and Images, 1975). In addition, sex-role theorists have emphasized the potential impact of children's games and toys on such development (cf. Goodman and Lever, 1972). Content analyses suggest that toy manufacturers have probably reinforced traditional sex roles through their marketing, advertising and packaging of toys. As a consequence of the pressure from various citizen groups (e.g., Public Action Coalition on Toys), some toy manufacturers are seeking to market nonsexist, nonviolent and nondangerous toys. It is argued that toys are a reflection of our value system and should, therefore, reflect the growing number of options in our society for both males and females. Toys should not serve to indoctrinate children into traditional sex roles, nor should they force a role reversal; rather, they should allow children choices in contemplating occupational careers, family patterns and other future roles (Leonard, 1976). Obviously, the possible role of toys in the shaping of attitudes and values cannot be ignored.

As a result of the influence of parents, peers and institutions such as the schools, young girls perceive a much narrower range of occupational choices than do young boys. The focus of this study is the potential of the medium of toys and games for facilitating the perception of a greater range of occupational choices and alternatives for both boys and girls—alternatives which are *not* based on traditional sex roles. In our society it is assumed that males must eventually make a career decision; it is not *assumed* that females must also make such a decision. However, this notion is unrealistic in light of the fact that women currently constitute nearly 40 percent of the work force and that 90 percent of the women in the United States have worked or will work at some time in their lives (U.S. Labor Department Statistics, 1975).

Literature Review

Women in the Labor Force

The issue of the occupational aspirations of women or girls is particularly important today because increasing proportions of women participate in the labor force, especially since 1947. Since 1947, the percentage of women in the U.S. labor force has risen steadily from 31.8 percent (1947) to 45.7 percent (1974). (In contrast, 79.4 percent of men in the United States were in the labor force in 1974). In 1974, 63.2 percent of the 20-24 age bracket were working, 52.4 percent of those in the 25-34 age group, and 54.6 percent of those between the ages of 35 and 54 (U.S. Department of Labor, 1975). In fact, in 1975 many of these women held two of every five jobs in the United States (*U.S. News and World Report*, 1975). At least 40 percent of these women are the heads of households, often providing the sole or major support for their families (U.S. Department of Labor, 1975).

However, despite the large number of women working, women tend to be heavily concentrated in the "female jobs." These are the jobs that typically entail lower incomes and lower prestige than "male jobs." Such occupational segregation appears to be a direct product of sex-role socialization and is certainly an obstacle to the achievement of economic equality for women. As Blau (1975) points out, "separate but equal" is not a realistic tenet for women any more than for other groups in our society. The impact of a shift in the present situation could be substantial:

> Since women presently constitute nearly two-fifths of the civilian labor force and since they are so heavily concentrated in predominantly female jobs, complete integration is a task of enormous proportions. Once a substantial movement of women into the male sector of the labor market took place, however, we could expect the incomes of women in predominantly female occupations to increase, since the supply of labor for these jobs would no longer be so abundant. This in turn should attract men into presently female occupations. Thus the long-range benefits of a sizable movement toward increased integration could be very great (Blau, 1975.225).

The statistics cited above indicate that a large proportion of the female population either chooses to work or must work, and yet current occupational socialization for females (via parents, schools, books, toys, etc.) is not geared to preparing women for occupations that are economically rewarding or status-conferring. In addition, the employment statistics are not at all consistent with the popular notion that girls need not concern themselves with future occupational aspirations because they will not be a part of the labor force. That is, the reasoning that girls only need to make themselves attractive to find a husband and to prepare themselves to be homemakers and mothers is faulty. The *reality* is that they are likely to be homemakers *and* members of the work force.

Since early socialization is critical in terms of laying the foundation for adult roles, women in particular stand to benefit from an increased awareness of their occupational opportunities. A brief summary of pertinent aspects of early sex-role socialization follows.

Sex-Role Development

The process of socialization involves learning to play roles and learning the norms of one's culture. Individuals are initially socialized primarily within the family, and later within other social groupings. Sex roles are assigned very early. Each culture has its own definitions about the roles assumed "natural" for men and women, and crosscultural data suggests that there is a great deal of variation in these definitions. That is, cross-cultural evidence suggests that the characteristics of maleness and femaleness are not biologically determined, but instead are based on cultural definitions of the types of behavior considered appropriate for each sex (cf. Mead, 1939; Whiting and Edwards, 1976).

The application of cultural definitions at birth is documented by research that suggests that there are sex differences in the behavior of male and female infants—differences mostly attributable to the reinforcement the parents give for behavior defined as sexually appropriate (Moss, 1967; Goldberg and Lewis, 1969). This type of socialization is accomplished by means of simple behavioral reinforcement. The child is rewarded for sex-appropriate responses and often punished (for example, through love withdrawal or not being given attention) for sex-inappropriate behavior. In a culture that defines aggressive behavior as "boy-like," we would expect boys to be rewarded for aggressive behavior. If nonaggressive and obedient behavior is defined as "girl-like," then girls are likely to be rewarded for conforming to the definition and punished for being aggressive. As social learning theory would predict, girls in such cultures are less aggressive and more obedient and conforming in their relationships than are boys.

Once the child is old enough to make conceptual distinctions, cognitive learning begins. In the preschool years, three analytic processes occur in sex-role learning (Weitzman, 1975:109). This learning process begins around the age of three or four and is complete by age six. The three processes the child learns are:

1. To distinguish between men and women and between boys and girls, and to know what kinds of behavior are characteristic of each;
2. To express appropriate sex-role preferences for himself or herself;
3. To behave in accordance with sex-role standards.

It has also been suggested that sex-typing is initiated by early sex *labeling* of children (Kohiberg, 1966) as a "boy" or a "girl." By the age of two or three, children know their own self-categorization and begin labeling others. This basic sexual self-concept becomes a major cognitive organizer and determinant of attitudes, values and activities. Thus, the boy in effect says, "I am a boy; therefore I want to do boy things; therefore the opportunity to do boy things (and to gain approval for doing them) is rewarding" (Kohlberg, 1966:89). These things are learned from men and women in the child's social world who serve as role models and who frequently provide instructions on appropriate behavior. While parents are important to the development of sex roles, there are several other sources of sex-role learning.

Sources of Sex-Role Learning

Books and Television.

Several studies indicate that children's books are an important "propaganda" tool (e.g., Weitzman et al., 1972; Mitchell, 1973; Oliver, 1974; Women on Words and Images, 1975). These studies indicate that girls are portrayed in books as passive, engaging in service activities to assist and please their brothers or fathers, while boys are portrayed in active, adventuresome and independent roles. The implication of many children's books is that boys can hold unlimited aspirations and that their future careers can include adventure, prestige and financial success. On the other hand, it is suggested (indirectly) that girls limit their aspirations to the less prestigious and less adventuresome world of work. Books, like parents, can provide role models for children. In children's books men are typically shown in a wide variety of professions and occupations, while women are nearly always portrayed as wives or mothers. As Weitzman et al. (1972) point out:

> ... Little girls receive attention and praise for their attractiveness, while boys are admired for their achievements and cleverness. For girls, achievement is marriage and becoming a mother. Most of the women in picture books have status by virtue of their relationships to specific men—they are the wives of the kings, judges, adventurers and explorers, but they themselves are not the rulers, judges, adventurers and explorers.
>
> Through picture books, girls are taught to have low aspirations because there are so few opportunities portrayed as available to them. The world of picture books never tells little girls that as women they might find fulfillment outside of their homes or through intellectual pursuits.
>
> In a country with close to 40 percent of the women in the labor force it is absurd to find that women in picture books remain only mothers and wives ...
>
> Their future occupational world is presented as consisting primarily of glamour and service. Women are excluded from the world of sports, politics and science. They can achieve only by being attractive, congenial and serving others.

Television provides another source of sex-role socialization. The images presented on television are similar to those presented in children's books. These images reflect and reinforce stereotyped notions of sex roles. Research indicates that commercials and programming consistently project sex-role stereotypes (cf. Gardner, 1970). Men are portrayed as independent and intelligent and women as submissive, dependent and very concerned with developing and maintaining their sex appeal.

Toys and Games. Yet another influential source of sex-role socialization is found in children's toys. Toys and games, like books and television, can function to influence future aspirations and attitudes as evidenced in this quote from Pogrebin (1973:49):

> Job bias is illegal in adult society, but it proliferates among so-called educational toys. Playskool's "When I Grow Up," a matching game, contains pictures of 21 males in widely varied jobs, from mason to milkman and from sailor to scientist. The three females match up with teacher, violinist and dancer. "Occupations," a preschooler's puzzle by Fisher-Price, gives boys five role choices; girls can pick "mother," ballerina," or "nurse." "People and Jobs" (Questor) has four women out of 24 small puzzles. The women match up with only four jobs: librarian, teacher, waitress, and skier.

As infants, children are exposed to toys that are relatively neuter—such as rattles and mobiles, but as children mature their toys tend to become dichotomized along sex-role lines. Consequently, they transmit very different messages about "appropriate" sex-role behavior. Boys receive toys that are identified with the masculine role as it is culturally defined. Boys tend to play with trucks, cars, science equipment, guns, tools, and other toys designed for manipulation, destruction and construction (Mitchell, 1973). On the other hand, girls are offered dolls, cooking equipment, domestic tools, and other toys that suggest the only "appropriate" vocation for females—mothering. This is further illustrated in the following quote (Komisar, 1971:305) from an advertisement of the Mattel toy manufacturing company.

> Because girls dream about being a ballerina, Mattel makes Dancerina ... a pink confection in a silken blouse and ruffled tutu. ... Wishing you were older is part of growing up. ... Barbie, a young fashion model, and her friends do the "in" things girls should do—talk about new places to visit, new clothes to wear and new friends to meet. ...
>
> Because boys were born to build and learn, Mattel makes Tog'l (a set of building blocks) for creative play. ... Because boys are curious about things big and small, Mattel

> makes Super-Eyes, a telescope that boys can have in one ingenious set of optically engineered lenses and scope ... that ... create dozens of viewing devices—all.for science or all for fun.

In a study of Christmas buying patterns, Yale sociologists, Janet Lever and Louis Goodman (1972), found that boys received more toys and a wider range of toys as gifts. Buyers were more likely to buy creative toys (e.g., science kits) for boys and passive toys (e.g., dolls) for girls. Boys tended to receive more expensive and varied toys and were much more likely to receive toys that related to occupations or to cognitive learning.

In addition to the actual *content* of toys and games on the market, sexism has been noted in the *packaging* of toys ("visual brainwashing"). Several groups of women have studied the covers and boxes of toys. Mary Bailey of Garrett Park, Maryland, conducted one tabulation of 842 toys for the National Organization of Women (*Washington Post*, 1972). Bailey's researchers (mothers) found that there were twice as many boys as girls on the covers of preschool toy boxes. There were 12 times as many boys as girls depicted on game packages. In science and education toys, boys were depicted 16 times more often than girls. When both sexes were pictured, in 14 out of 15 packages, the girls were the onlookers.

In another 1972 toy study it was found "that of 860 toy boxes, 50 percent of the toys costing under $2.00 were aimed at girls, with only 31 percent of the toys in that price range aimed exclusively at boys ... . However, in the $5.00 and over category, 18 percent were girl-oriented, but 34 percent were directed to boys."

According to the toy industry's figures, parents spend approximately $85.90 a year on the average on toys. A 1973 Crossley Survey report found 80 percent of the adult toy buyers walking into discount stores and 78 percent of those going into department stores had absolutely no idea of what they would walk out with. Such haphazard buying suggests that few parents stop and think whether to choose a nurse kit, a doctor outfit, or a medic bag for their daughter.

Ordinarily, equipment in schools is chosen with more prior thought, but major considerations usually include cost, durability, and educational value rather than sex stereotyping or its absence. This investigation may encourage teachers to consider the "self-image" dimension of toys for the first time.

Other than this study, we are unaware of any research that informs as to whether or not the new career toys in and of themselves have a positive impact on children. Representatives of the toy industry insist that educational toys have an influence, whereas they insist that violent toys have no influence. (A similar inconsistency is evident in the television industry, where broadcasters say to upset parents, "Television has no effect," and yet say to the advertisers, in marketing commercial time, "See the effect we have!" (*New York Times Magazine*, 1975).

Research studies on the effect of toys on children are also inconsistent. Dr. Jerome Frank of the Johns Hopkins University School of Medicine quotes studies which indicate that "Children who had played with toy guns were more likely to destroy the work of a friendly playmate than children who had not." However, Dr. H. Robert Quilitch of the Nevada Mental Health Institute and the Center for Applied Behavior Analysis in Lawrence, Nebraska, found that children given an educational clock toy did not learn to tell time any faster than those in the control group. There may be significant differences between the effects of guns and clocks on children that explain these contradictions, but to date, findings from studies concerning the impact of playthings on children's values, self-esteem and behavior are inconclusive.

There is only one study of which we are aware that involves an assessment of children's reactions to toys together with a deliberate attempt to talk to the children about their attitudes. Psychologist Paul Torrance, in his studies on creativity, found a reluctance on the part of six-year-old boys to play with nurses' kits and a reluctance on the part of third-, fourth- and fifth-grade girls to work with science toys (Howe, 1971).

The studies that have been described all assume an impact from television, books and toys on sex-role socialization. Other than our work, we know of no research that has directly manipulated these sources to examine a cause-and-effect relationship. Thus far, television, books and toys have been viewed as potential, if not probable, influences on sex-role stereotypes because of their obviously biased perspective and presentation. It is clear, from interviews with children, that clearly differentiated male and female roles are internalized by children. When they have been asked to describe what they feel is expected of boys and of girls, their responses are consistent with the roles presented in the media. This is also true when children have been asked about their images of men and women (Hartley, 1959). However, we do not have adequate information on the impact of any one source (i.e., toys, books, television).

This study focuses upon assessing the impact of occupational toys and games on the aspirations of young children. Currently, new toys and games are being introduced on the market which reflect the new awareness of women's expanded roles. These are nonsexist toys in that they do not attempt to promote militaristic values and aggression in boys or to limit career aspirations and alternatives for girls. In other words, these are toys and games that do not indoctrinate children into traditional sex roles—they offer options for both boys and girls; none of them are for "boys only" or "girls only." Our study investigates the impact of the nonsexist toys on the occupational aspirations of kindergarten and fourth-grade children.

Objective of the Study

As outlined above, there is extensive empirical literature which documents the differentials in the socialization of male and female children in our culture. This literature points out the pervasiveness of sex-role stereotyping. Stereotypical notions of sex roles permeate the media (books, films and television), the language, the educational system, and even play (sports, games and toys). It is the latter, toys and games, that are of particular interest in this study.

This project explores the potential impact of nonsexist occupational toys and games on the attitudes and aspirations of kindergarten and fourth-grade children. The hypothesis to be tested is that children who play with toys and games that suggest "non-sex-biased" career options will be less likely to hold to traditional occupational expectations for their futures. The range of career expectations will be addressed through a comparison of the responses of a control group of children who do not receive the "alternative" toys in the classroom and an experimental group who do receive them.

This investigation is particularly relevant because the literature in the area of sex-role socialization focuses primarily on content analyses of the media, the language, textbooks, and so forth. These content analyses verify the extensiveness of sex-role stereotyping, but they do not isolate the effects of different influences, nor do they inform us of the nature of these relationships. In addition, they do not suggest any way to intervene in a positive manner to allow more choices for both sexes. One of the objectives is to determine if toys now available in the marketplace—rather than available through specialized teacher curriculum sources—do influence children's career aspirations.

Selection of Toys

During the past five years, consumer and feminist groups have made demands on the toy industry to stop manufacturing and marketing toys in a sex-stereotyped fashion. The local discount store in Logan, Utah, for example, has signs above one aisle saying "Boys' Toys" and a sign above another aisle saying "Girls' Toys." Such retail practices, according to consumer and feminist advocates, channel parents into certain buying patterns and do not allow them to individualize purchases for their children.

Some manufacturers have designed or accepted designs from women's groups (e.g., Women's Action Alliance) for new products geared to meet the desires and needs of a changing society. The toys selected for this study were all created within the past three years and are nonsexist as well as educational. Many have received awards within the past two years and have been highly publicized in *The New York Times*, *Christian Science Monitor*, and on CBS Television.

CHAPTER TWO

METHODS

Sampling Procedure

In August of 1976, the principal investigators made contact with the Utah State Board of Education and with school superintendents in three Northern Utah counties (Rich, Box Elder and Cache), which comprise the "Bear River Association." Social planning for the basically rural, politically and socially conservative area is based on these three counties. At this time we received permission to contact principals in their four districts about participation in the study.

During the months of September and October, 1976, we sought and received the cooperation of eleven principals in the four school districts. Thus, we gained access to eleven elementary schools and personally discussed the project in detail during meetings with the teachers in the 48 classrooms to be involved in the study. We were pleased to find that the teachers were very cooperative and enthusiastic about the project. They were eager to have the opportunity to use the educational materials as a supplement to their present supplies.

As indicated in Table 2:1, 22 kindergarten classes are included in the sample. Of these, 13 were assigned to experimental status and 9 to control status. Nineteen fourth-grade classrooms were selected, and of these, 10 are in the experimental group and 9 in the control group. A total of 468 kindergarten students and 487 fourth-grade students participated. Two hundred and seventy-four (274) kindergarteners were included in experimental classrooms and 194 in control classrooms. Of the fourth graders, 260 were in experimental

Table 2:1. Number of Classrooms, by Grade and Group

Grade	Experimental	Control	Total
Kindergarten	13	9	22
Fourth Grade	10	9	19
Total	23	18	41

classrooms and 227 in control classrooms (see Tables 2:2 and 2:3).*

Tables 2:2 and 2:3 indicate the gender composition of the two grades by their group assignment. The kindergarten experimental group includes 153 females and 121 males; the kindergarten control group is composed of 96 girls and 98 boys. The fourth-grade experimental group has 124 girls and 136 boys, and the control group has 104 girls and 123 boys.

The rationale for selecting kindergarten-age children is based on the literature (previously cited) which suggests that the sex-role learning process begins around age three or four and is virtually complete by age six. Selection of fourth-graders is based on research which indicates that this is an age at which children become more interested in technical areas and begin thinking about future aspirations and interests. These age groups are often juxtaposed in order to contrast the naïveté of the kindergarteners with the sophistication of the fourth graders. George B. Leonard describes the differences between kindergarten and fourth grade as "specimens of two different species," whereas the fourth graders are "locked in painful self-awareness." The kindergarten child is still family-oriented, but the fourth-grade child is peer-oriented. By using these age groups, we are able to study both influences (G. Leonard, 1968).

The Research Design

In November and early December the toys and games (listed in Appendix A) were delivered to the 23 experimental classrooms together with various handouts prepared for the students and for the bulletin boards in the classrooms. These handouts (see Appendix B) were furnished to accompany various toys for

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*Children who responded with "nonsense" were not included (e.g., "When I grow up I can be a 'dumb stupid dodo.'").

Table 2:2. Number of Experimental Subjects, by Grade and Sex

Grade	Male	Female	Total
Kindergarten	121	153	274
Fourth Grade	136	124	260

Note: These numbers refer to those students who participated in the exercise. In addition, children who gave "nonsense" responses were excluded. In the self condition, 30 males and 14 females in the experimental group refused or gave nonsense responses. In the reversal condition, 30 males and 14 females (not necessarily the same children) in the experimental group refused or gave nonsense responses.

Table 2:3. Number of Control Subjects, by Grade and Sex

Grade	Male	Female	Total
Kindergarten	98	96	194
Fourth Grade	123	104	227

Note: These numbers refer to those students who participated in the exercise. In addition, children who gave "nonsense" responses were excluded. In the self condition, 9 males and 19 females in the control group refused or gave nonsense responses. In the reversal condition, 17 males and 11 females in the control group refused or gave nonsense responses.

the purpose of providing additional career information. We also provided the teachers with forms to assist them in keeping track of the amount of time the toys were used.

The teachers with experimental group classes were contacted in January (one month after receiving the toys) to determine if there were any questions or problems in utilizing the materials. We were very satisfied to find that they all expressed pleasure with the toys and games and suggested that they were using them frequently (some, in fact, reported that the boxes holding the games were already falling apart because they had been used so often).

After the students had approximately four months to use and play with the materials, we returned (April, 1977) to administer a questionnaire to fourth graders in both groups and to supervise and exercise to be completed by kindergarten children in both groups. Thus, a posttest-only research design was utilized. This design is graphically portrayed as follows (Figure 2:1):

Kindergarten Experimental Group	R	X_1	O_1
Kindergarten Control Group	R		O_2
Fourth-Grade Experimental Group	R	X_2	O_3
Fourth-Grade Control Group	R		O_4

Figure 2:1. Research Design

X represents the exposure of the group to the experimental variable (the toys and games); 0 refers to the measurement of perceptions after the introduction of the toys to the experimental groups (X occurring in November, 1976, and 0 in March, 1977). R refers to the randomized assignment of experimental and control groups.

This design controls for a possible source of threat to external validity: the interaction of a pretest and X. That is, a significant finding could be due to an effect of testing (the effect of a pretest itself). The design is nonreactive and at the same time has all of the strengths found in a four-cell design, which includes a pretest as well as a posttest. If control and experimental groups are randomly assigned, as they will be, we can assume that the groups are equivalent prior to the introduction of X and that any difference between 0_1 and 0_2, or between 0_3 and 0_4, is due to the introduction of X

Using a questionnaire prior to the introduction of X could influence receptivity and response to X. Consequently, we determined that this design is preferable in that it gives more control and provides a stronger basis for generalizing to the general population (which, of course, is also an unpretested population). Interaction effects are certainly relevant to generalization efforts.[1]

Methods of Data Collection

Kindergarten Exercise

As mentioned above, children were tested in April to determine the effects of exposure to the toys and handouts through comparison of experimental and control subjects. Kindergarten children had two assignments (see Appendix C). The first was to "draw a picture of what you can be when you grow up." After completion of this assignment, the researchers left the classroom to return an hour later, at which time female children were requested to pretend they were boys and draw a picture of what they could be when they grew up. Male children were asked to pretend they were girls and draw a picture of what they could be when they grew up. The purpose of the break was to reduce the confusion regarding the exercise. Performance in the role reversal depicted in their drawings. Upon completion of the drawings, the research staff collected each child's picture and labeled it with the selected occupation as indicated to the researcher by the child and with the sex of the child.

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[1] An extended discussion of this argument can be found in D.T. Campbell and J.C. Stanley, *Experimental and Quasi-Experimental Designs for Research*, Rand-McNally, 1963.

Fourth-Grade Questionnaire

The fourth graders were asked to complete a three-part questionnaire (see Appendix D). Questions in Part I are open-ended; children are asked to indicate what they would *like* to be when they grow up. A second question in Part I asked, "What *can* you be when you grow up?" Students were asked to rank order their choices on these two items. The purpose of asking these similar questions was to determine if boys would perceive broader options within the "can be" format than girls and to see if children would differentiate in any way between the two ideas.

Part II was intentionally administered following Part I to avoid prejudicing the respondents. In this section, a number of different occupations are listed, and children are asked to check any which they would *like* to do (up to and including three choices). Again, they are requested to rank order their selections. About half of the occupations in this list correspond to toys and/or handouts given to the experimental classes. The object was to determine if experimental subjects were more inclined to designate a greater number of "toy-related" occupations than control subjects.

The third part of the questionnaire consists of a list of toys, games and kits. Children were requested to put check marks next to any of these they have at home. The items listed are polarized, some representing sex-role stereotyped items and others representing nonsexist items.

Teacher Questionnaire

While the children in the classrooms drew pictures or completed questionnaires, teachers were asked to complete another questionnaire (see Appendix E). These questions were administered to determine whether the control classrooms had had *any* exposure to the materials[2] and to ascertain something about teacher attitudes and preferences with regard to the toys.

Statistical Analysis

Measurement of Dependent Variables

The primary interest is in the effects of exposure to the toys on the occupational choices of children. To assess this effect, kindergarten children are asked to: "Draw a picture of what you can be when you grow up." To measure responses to this question, all occupational choices were assigned a percentage which was calculated from the 1970 census tabulations of the number of males in any given occupation. Thus, if a child said, "A nurse," the assigned number would be 3 (i.e., according to the census, only 3 percent of nurses in the United States are male). If the child said, "A mail carrier," the assigned number would be 93, because 93 percent of mail carriers are males. In this manner, the researchers did not make any arbitrary decisions about the "maleness" or "femaleness"—in terms of tradition—of any of the occupations. In addition, this gives us interval categories rather than the nominal ones which would emerge from attempting to classify each occupation as "neutral" or "traditionally male" or "traditionally female" (see Appendix F for the coding of occupations).

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[2] This was particularly a potential problem in the case of kindergarten classes where one teacher had both the morning and afternoon sessions and where one section was control and the other experimental.

Thus, percent male in any given occupation constitutes a mode of measuring the effect of exposure to the treatment. Further, this method is also used with kindergarten children in the role reversal condition in which they pretend they are of the opposite sex and indicate "what they can be" under that condition. This technique is also used in the coding of the occupational choices of fourth graders.

Another dependent variable used to assess differences in the occupational preferences is the number of different options selected by various subclassifications by region, sex and group. This is only used with the kindergarten classes. This particular variable does not reflect a qualitative assessment of the occupations selected; instead, it simply indicates the variety of unique preferences.

Two dependent variables are relevant to the fourth-grade analysis. Responses to two questions—"What would you like to be when you grow up?" and "What *can* you be when you grow up?"—will be measured using the percentage of males in the occupations selected (according to the U.S. Census Bureau).

An additional dependent variable pertains to the choices made in Part II of the fourth-grade questionnaire in which students are asked to choose three or fewer occupations they would like to be from a list of occupations. The dependent variable is the handouts distributed to the experimental classes. Some of the occupations correspond to specific careers discussed in the handouts (also related to the toys). We are interested in whether or not the handouts influenced the choices made.

Independent Variables

Three categories are of interest in the analysis of these data. The first, and most obvious, is group and the question of whether membership in the control or treatment group makes any differences in the occupational choices of the children. The second is sex: do boys and girls respond differently from one another, regardless of group or controlling for group? Finally, we are interested in the possible effects of region. None of the children in our sample live in what is ordinarily defined as an urban area. However, many of them live in Logan, Utah (a college town of about 25,000), while others live on small farms in or outside of towns with populations as small as 200. Due to this, we will also examine region as an independent variable, theorizing that the city children have possibly been exposed to a greater number and variety of role models in the community and are potentially more likely to have mothers who work.

Hypotheses - Kindergarten

The principal focus of the statistical analysis is to test the following hypotheses:

Hypothesis One. Children exposed to the experimental treatment (toys) will respond in a less sex-role stereotypical fashion in their occupational choices and will choose a greater number of unique occupations than children not so exposed, regardless of sex or region. This will be true in both the self condition and the role reversal condition.

Hypothesis Two. Regardless of exposure or sex, urban children will respond in a less sex-role stereotypical manner and will select a greater number of unique occupations than rural children. This will be the case in both conditions.

Hypothesis Three. Regardless of exposure or region, males will see a greater number of unique occupational options than girls and they will select occupations with a higher percentage of males in them. This will reverse for both sexes in the role reversal condition.

Hypothesis Four. Female children in the experimental group will respond in a less sex-role stereotypical fashion and will choose a greater variety of unique occupations than females in the control group.

These hypotheses will be systematically addressed through the following four questions.

1. Are there systematic effects due to exposure to toys (given sex and region)? More specifically, does exposure "liberate" children from occupational stereotypes?

2. Are there systematic effects due to region (knowing exposure and sex)? More specifically, are urban children more "liberated" in terms of occupational stereotyping than rural children?

3. Are there systematic effects due to sex (given exposure and region)? More specifically, are male children more "liberated" than female children?

4. Are there systematic effects due neither to group alone nor region alone nor sex alone, but attributable only to a certain combination of these variables? That is, are there interaction effects?

This section provides a documentation of the statistical procedures employed to provide empirical evidence bearing on these questions. The comparison specified by question one may be approached by an analysis of variance in which exposure or nonexposure to the treatment is the independent variable and the occupation selected is the dependent variable (specifically, the percentage of males in the occupation and the number of unique occupations expressed by the two groups). An overall F test will inform us of the probability that the mean difference between the experimental and control groups occurred by chance. We are actually testing the null hypothesis that there is no difference between these two means.

The second question refers to the main effects of region and the third question refers to the main effects of sex. The overall F test will examine the difference between the means. The answer to either question is not necessarily interpretable, however, if interaction is present. The fourth question focuses on interaction effects and a three-way analysis of variance is necessary. Again, the F test will provide information as to whether the mean differences of the various combinations are statistically significant.

Hypotheses - Fourth Grade

The statistical analysis in Chapter Four will focus on a discussion of the findings relevant to the following hypothesis.

Hypothesis One. Children exposed to the experimental treatment will respond with less sex-role stereotypical occupational choices than children not so exposed, given sex and region.

Hypothesis Two. Urban children will respond with less sex-role stereotypical occupational choices than rural children, given group and sex.

Hypothesis Three. Males will select occupations with a higher percentage of males in them than will females, knowing group and region.

Hypothesis Four. Female children in the experimental group will respond with less sex-role stereotypical occupational choices than females in the control group.

Hypothesis Five. Children receiving handouts will be more likely to select occupations depicted in the handouts than will children who do not receiving handouts.

These five hypotheses will be systematically addressed through the following five questions.

1. Are there systematic effects due to exposure to toys and handouts alone (irrespective of sex or region)? Does exposure "liberate" children from occupational sex stereotyping?

2. Are there systematic effects due to region alone (irrespective of exposure and sex)? More specifically, are urban children more "liberated" from occupational sex stereotyping?

3. Are there systematic effects due to sex alone (irrespective of exposure and region)? More specifically, are boys more "liberated" than girls?

4. Are there systematic effects due neither to group alone nor region alone nor sex alone, but attributable only to a certain combination of these variables? That is, are there interaction effects.

5. Are there systematic effects due to receiving handouts, regardless of sex or region? Do children who receive handouts select occupations depicted in the handouts?

The statistical analysis will attempt to provide empirical evidence bearing on these questions. The first three questions will each be approached through a one-way analysis of variance in which the independent variables are exposure to the toys, region, and sex, and the dependent variable is the percentage of males in the selected occupations. A one-way analysis of variance will also be done to answer the fifth question. In this case, the independent variable is the specific occupation selected from the list in Part II and the dependent variable is exposure to the handouts.

The fourth question refers to interaction effects and both a two-way and a three-way analysis of variance will be necessary. Again, the obtained F ratio will indicate whether mean differences of the various combinations are statistically significant.

Descriptive Analysis

A descriptive analysis of the specific occupations selected by the children in both kindergarten and fourth grade will be included in Chapters Three and Four. Interest is in the differences, by region, gender or group, of choices. The U.S. Bureau of the Census categories will be used in classifying the occupations.

CHAPTER THREE

ANALYSIS OF THE KINDERGARTEN DATA

The following analysis primarily focuses on a discussion of the results of the tests of the four hypotheses. In addition to the statistical analysis, a descriptive analysis is included in this chapter.

Percentage Male in Occupation

The basic dependent variable in this discussion is the percentage of males in the occupation represented in the children's drawings. As mentioned previously, this percentage was determined from U.S. Census records. More specifically, the dependent variables are (1) percent male in the "self-condition," and (2) percent male in the "reversal condition." The independent variables examined include group, sex and region.

The full model was run for each of these and the subset containing all interaction was judged insignificant. Subsequently, the model:

$$Y_{ijkl} = b_0 + R_i + G_j + S_k + e_{ijkl}^{*}$$

excluding the interactions, was adopted (this is a main-effects-only model).

Percent Male - Self Condition

The independent variables of group and region were not found to be significantly different. That is, the responses of children in the experimental and control groups were not significantly different from each other, nor were the responses of children in rural regions significantly different from those in urban regions.

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*Where R = region; G = group; and S = sex.

However, sex differences were very highly significant. The obtained F value of 866 is statistically significant at the .001 level, with only 10.83 required. As indicated in Table 3:1, the mean percentage of males in the occupations selected by boys was 88 percent; the average percentage of males in occupations selected by girls was 13 percent. This table also shows the percentage differences by group; obviously they are very, very slight. Another table, 3:2, indicates the percentage of boys and girls selecting a given interval of percent male in occupations. We find that 66.4 percent of the girls, in the self condition, selected occupations that only have from 0-10 percent males in them. Conversely, nearly 80 percent of the boys selected occupations that are from 91-100 percent male.* This is very clearly illustrated in the bar graph in Figure 3:1.

Percent Male - Reversal Condition

Once again the independent variables of group and region did not prove to be of statistical significance. The experimental group did show a slight trend towards lowering the "maleness" of occupations, but it was not statistically significant at the .05 level.

The sex difference, however, was very significant again, at the .001 level (F = 328). Table 3:3 shows that the average percentage of males in the occupations selected by girls, under a reversed-role condition, was 84 percent and for boys the average was 27 percent. Table 3:4 indicates the percentage of girls and boys selecting a given interval of percent male in occupations. In the reversed-role condition, almost 74 percent of the girls selected occupations that have from 91-100 percent males, and 48 percent of

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*The choices of "mother" and "father" were included as occupations. Thus, the choice of father would be one that is 100 percent male and mother, 0 percent male, by definition.

Table 3:1. Average Percentage of Males in Occupations Selected, by Sex and Group, in Self Condition

Group	Male	Female
Experimental	87.7	12.9
Control	88.1	13.4
Combined Average	88.0	13.3

For group: F = .045; df = 1/464; $p < .05$

For sex: F = 866; df = 1/464; $p < .001$

Table 3:2. Percentage by Sex, Selecting an Occupation With a Given Percentage of Males in It, in Self Condition

% Male in Occupation Selected	Female	Male
0 - 10	66.4	0.0
11 - 20	11.2	1.8
21 - 30	1.2	0.0
31 - 40	.8	.5
41 - 50	.8	.5
51 - 60	2.4	.9
61 - 70	1.2	.5
71 - 80	3.6	4.6
81 - 90	2.0	11.8
91 - 100	10.4	79.4
Total	100.0	100.0
	N = 249	N = 219

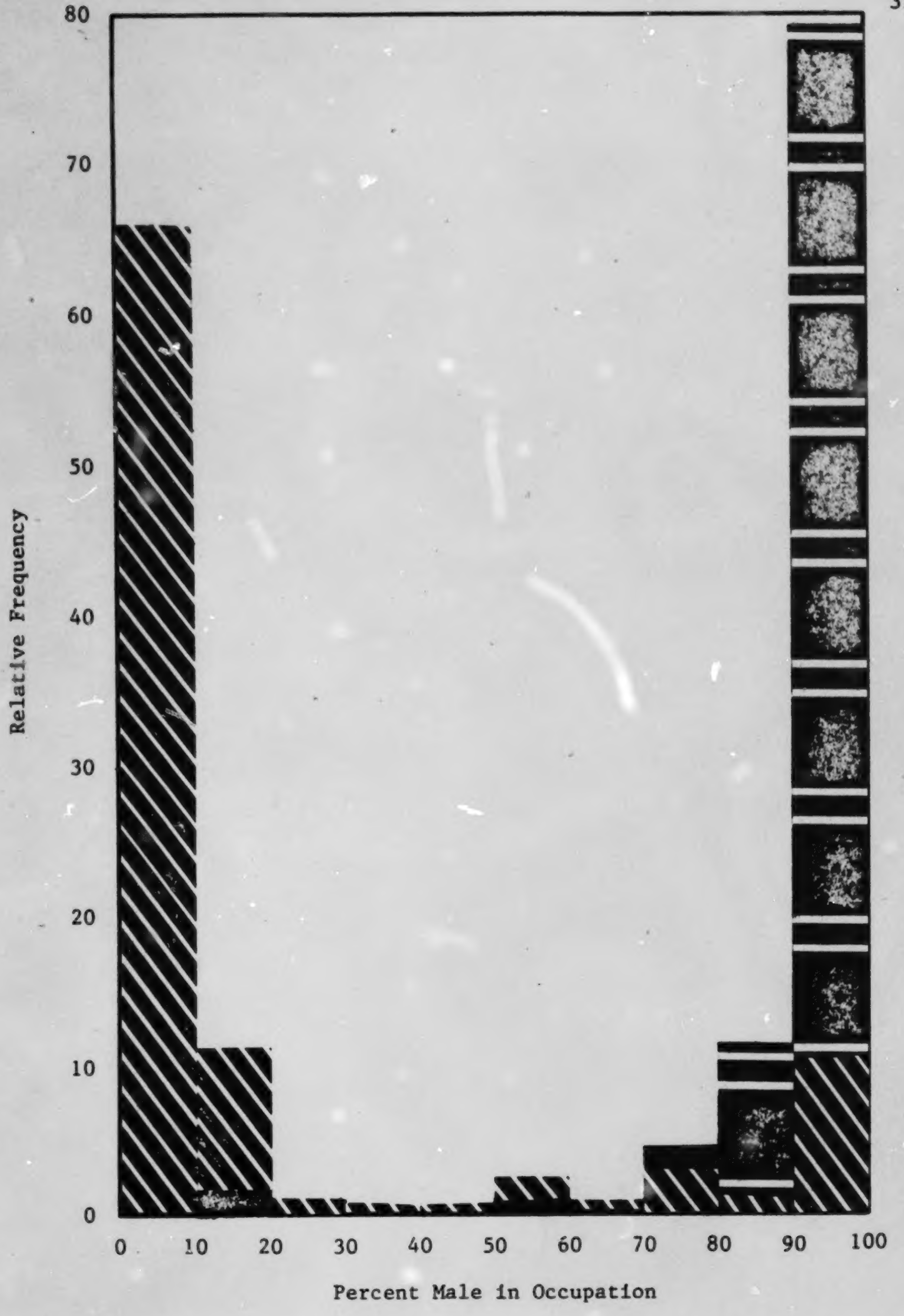

Figure 3:1. Frequency Distribution of Percentage of Males in Occupational Choices, by Sex, in Self Condition

▨ **Females** ■ **Males**

Table 3:3. Average Percentage of Males in Occupations Selected by Sex and Group, in Reversal Condition

Group	Male	Female
Experimental	25.0	82.6
Control	28.8	85.7
Combined Average	27.0	84.0

For group: $F = 1.51$; $df = 1/464$; $p <$

For sex: $F = 328$; $df = 1/464$; $p <$

Table 3:4. Percentage by Sex, Selecting an Occupation With a Given Percentage of Male in It, in Reversal Condition

% Male in Occupation Selected	Female	Male
0 - 10	3.2	47.9
11 - 20	2.0	13.7
21 - 30	0.0	.5
31 - 40	0.0	.9
41 - 50	0.0	.5
51 - 60	2.8	5.5
61 - 70	1.2	1.8
71 - 80	5.2	5.0
81 - 90	12.0	2.7
91 - 100	73.6	21.5
Total	100.0	100.0
	N = 249	N = 219

the boys selected occupations that are from 0-10 percent male. This is further illustrated and elaborated in the bar graph presented in Figure 3:2.

In summary, this data indicate that children are rather fully aware of sex gender of occupations by the time they reach kindergarten. The effects of region and group on the percent male in the occupations are relatively small. In the reversal condition the experimental group does show a lower percent of "maleness" than the control group, but this only approaches significance. Finally, it is observed that boys are somewhat more flexible in the reversal condition than girls are in the self condition. That is, they are more likely to choose occupations with a higher percentage of males when they pretend to be girls than do girls themselves. Perhaps this is a reflection of actually seeing more nonsex-role stereotypical options. It is also possible that this was not the case at all, but that they were not really cooperating because they didn't want to pretend to be girls.*

Number of Options

The basic dependent variable in this section is the number of unique occupations chosen (each occupational choice was assigned a different code number; see Appendix F). Interest is in the effect of the experimental treatment on this variable with reference to the background factors of sex and origin.

Graphical plots and the nature of the data indicated that weighted least squares on a transformed variate of the number of unique oocupations would be appropriate. The weights employed involved the number of students

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*The researchers noted that boys were far more reluctant than girls to cooperate in the reversal phase of the testing. Many boys groaned audibly or verbally complained and had to be cajoled into drawing the picture; this was very rare for girls. Boys were also more inclined to refuse to do the assignment at all.

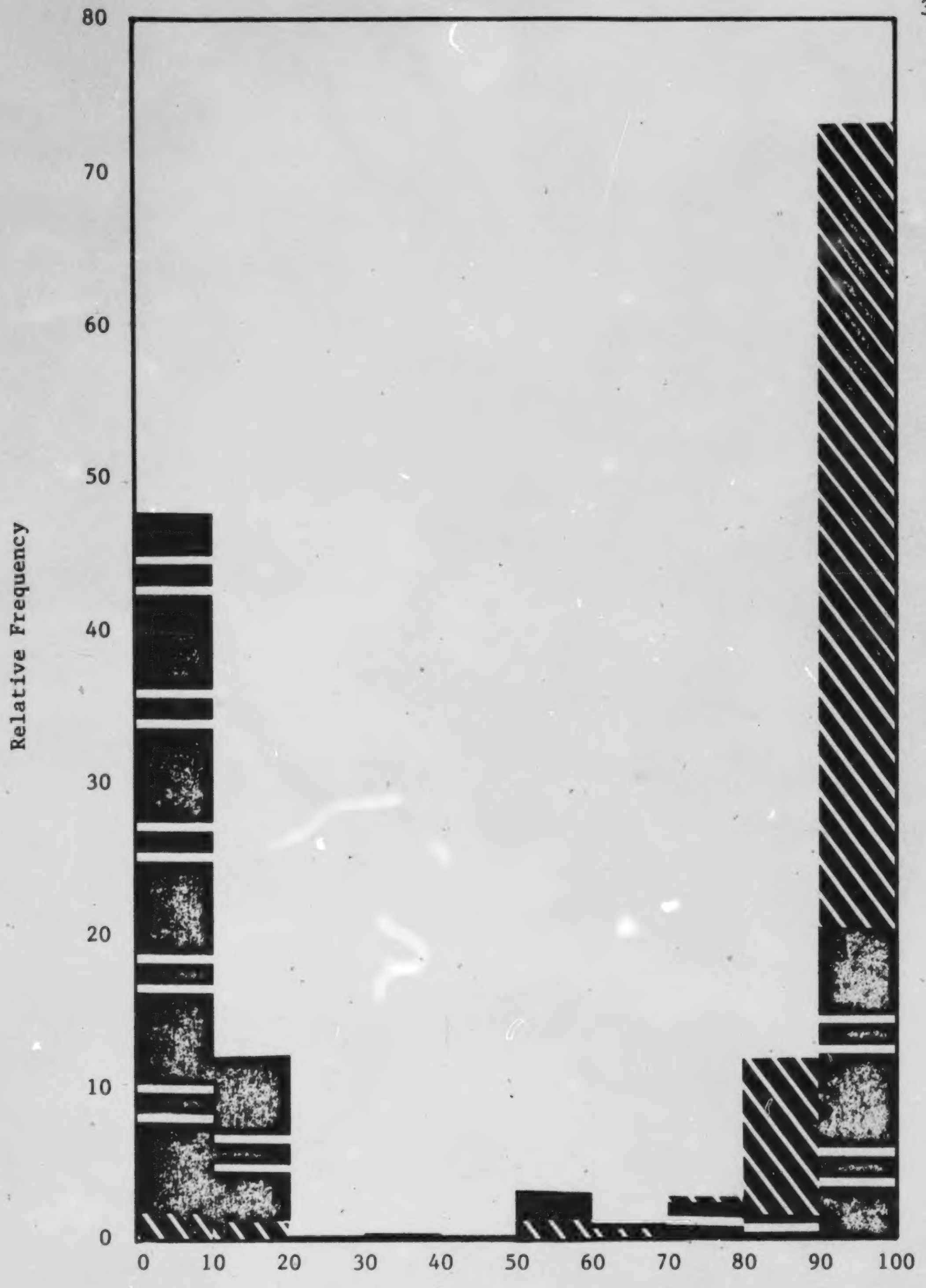

Figure 3:2. Frequency Distribution of Percentage of Males in Occupational Choices, by Sex, in Reversal Condition.

▨ Female

■ Male

within a subclass, as the variance was found to increase linearly with subclass size. There are 44 subclasses derived from examining the 22 classrooms by sex (see Table 3:5 for the subclass categories). The transformation was the inverse sin transformation as suggested by Neter and Wasserman (1974).*

The data was analyzed using multiple regression techniques for weighted least squares on dummy variables. The parameters of the full model:

$$Y_{ijkl} = b_o + (\frac{1}{n_{ijkr}}) \{b_1 + R_i + G_j + S_k + RG_{ij} + RS_{ik} +$$

$$GS_{jk} + RGS_{ijk}\} + 1_{ijkr}{}^{**}$$

were estimated and tested for significance. The transformed cell means were then adjusted to the average subclass size and transformed back to the average number of unique occupations.

Average Number of Choices - Self Condition

As demonstrated in Table 3:6, the hypothesis that the experimental group (regardless of sex or region) would indicate a greater number of unique occupational choices than the control group was not supported. The proportion for the experimental group was .631 and for the control cases, .641—not a statistically significant difference.

The expectation that boys would see significantly more options than girls, regardless of group or region, is supported by the F test, and by comparison of main effect means to the overall average (see Table 3:7).

The third hypothesis, that urban children would see a greater variety of alternatives than rural children was not supported. The reader is referred to Table 3:6 for elaboration of the effects of this variable.

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*This dependent variable does not reflect the qualitative nature of the occupation selected but is more related to the variety of choices made.

**Where R = region; S = sex; and G = group.

Table 3:5. Breakdown of Subjects into Subclasses

Region	Group	Sex	N
Urban	Experimental	Female	10
		Male	10
	Control	Female	7
		Male	7
Rural	Experimental	Female	3
		Male	3
	Control	Female	2
		Male	2
Total			44

Table 3:6. Main Effects for Number of Unique Options Selected in Self Condition[a]

Variable		Unweighted Cell Means	df_1	df_2 (N=2)	F^b	P
Region	Urban	.660	1	35	.96	> .05
	Rural	.612				
Group	Experimental	.631	1	35	.09	> .05
	Control	.641				
Sex	Female	.578	1	35	7.12	< .05
	Male	.694				

Note: The higher the mean response, the greater the number of unique occupations selected.

[a] The regression analysis of the transformed average number of unique options and cell means are expressed as retransformed variates (proportions) adjusted to the average subclass size.

[b] F = 4.12 for significance at .05 level.

Table 3:7. Cell Means, by Region, Group and Sex, in Self Condition

Region	Group	Sex	Unweighted Cell Means
Urban	Experimental	Female	.654
		Male	.702
	Control	Female	.610
		Male	.673
Rural	Experimental	Female	.553
		Male	.615
	Control	Female	.494
		Male	.787
Overall Mean			.636

Note: The higher the mean response, the greater the number of unique occupations selected.

Table 3:8 shows the cell means for the interactions. It appears that none of the three two-way interactions are significant. The region by sex interaction and the group by sex interaction approach significance but are not different enough to warrant extensive discussion or generalizations.

Average Number of Choices - Role Reversal Condition

Table 3:9 indicates the main effects and again they are somewhat clouded due to the interactions of the variables (refer to Table 3:10). Differences based on region, group or sex alone are not significant.

The two-way interactions are indicated in Table 3:10. Two of the interactions are significant at the .001 level, with the rural control group selecting the most options when pretending to be of the opposite sex. This finding does not support our expectation that urban experimental groups would select the greatest number of alternatives in either condition. The other significant interaction, sex by group, indicates that experimental females select more options than rural females, when pretending to be boys, but control males select more than experimental males when pretending to be girls. Table 3:11 shows the cell means for region by group and by sex in the reversal condition. The highest mean is for rural, control, males and the lowest is for rural experimental males (who are pretending to be girls).

In summary, most of the hypotheses were not supported. In the self condition boys did see significantly more options than girls, but this was not true in the reversal conditions (that girls would see more than boys). None of the interactions in the self condition were significant; however, in the reversal condition, it appears that region has an influence, particularly in the case of rural, control boys—an unanticipated finding. It is difficult to understand why this might have occurred.

Table 3:8. Interaction Effects for Number of Unique Options Selected in the Self Condition[a]

Variable		Unweighted Cell Means for Interactions		df	F[b]	P
		Group				
		Experimental	Control			
	Urban	.678	.641			
Region				1/35	1.31	>.05
	Rural	.584	.640			
		Sex				
		Female	Male			
	Urban	.632	.688			
Region				1/35	1.94	>.05
	Rural	.524	.701			
		Sex				
		Female	Male			
	Experimental	.604	.658			
Group				1/35	2.10	>.05
	Control	.552	.730			

Note: The higher the mean response, the greater the number of unique occupations selected.

[a] The regression analysis of the transformed average number of unique options and cell means are expressed as retransformed variates (proportions) adjusted to the average subclass size.

[b] F = 4.12 for significance at .05 level.

Table 3:9. Main Effects for Number of Unique Options Selected in Reversal Condition

Variable		Unweighted Cell Means	df_1	df_2 (N=2)	F^b	P
Region	Urban	.610	1	35	.02	> .05
	Rural	.612				
Group	Experimental	.584	1	35	1.92	> .05
	Control	.638				
Sex	Female	.618	1	35	.08	> .05
	Male	.604				

Note: The higher the mean response, the greater the number of unique occupations selected.

[a] The regression analysis of the transformed average number of unique options and cell means are expressed as retransformed variates (proportions) adjusted to the average subclass size.

[b] F of 4.12 required for significance at the .05 level.

Table 3:10. Interaction Effects for Number of Unique Options Selected in the Reversal Condition[a]

Variable		Unweighted Cell Means for Interactions		df	F[b]	P
		Group				
		Experimental	Control			
	Urban	.677	.542			
Region				1/35	22.9	<.001
	Rural	.490	.734			
		Sex				
		Female	Male			
	Urban	.648	.572			
Region				1/35	2.82	>.05
	Rural	.588	.637			
		Sex				
		Female	Male			
	Experimental	.633	.534			
Group				1/35	4.95	<.05
	Control	.603	.674			

Note: The higher the mean response, the greater the number of unique occupations selected.

[a] The regression analysis of the transformed average number of unique options and cell means are expressed as retransformed variates adjusted to the average subclass size.

[b] F value of 4.12 required for significance at .05 level.

Table 3:11. Cell Means, by Region, Group and Sex, in Reversal Condition

Region	Group	Sex	Cell Means
Urban	Experimental	Female	.756
		Male	.599
	Control	Female	.540
		Male	.544
Rural	Experimental	Female	.510
		Male	.470
	Control	Female	.665
		Male	.803
Overall Mean			.611

Note: The higher the mean response, the greater the number of occupations selected.

Descriptive Analysis

Self Condition Occupational Choices

Table 3:12 shows the percentage of males and females selecting a given occupational category in the self condition. The table also breaks this data down by gender and group. The analysis is primarily based on the U.S. Census occupational categories. However, certain specific occupations were extracted and analyzed independently because they were selected so frequently. These include nurse (from the professional category), doctor (professional) and police officer (service worker). In addition, the choices of mother and father (though not in the census as occupations) are included. Whether girls responded "housewife" or "mother," they were included in the mother category.

A perusal of Table 3:12 indicates that there were only a couple of cases where boys said they would be a father when they grew up; for girls responding mother, this ranged from 9 to 14.4 percent. A very popular category, with nearly 50 percent of the control group girls and almost 46 percent of the experimental group girls selecting it, was nurse. In contrast, only 6 percent of the boys chose doctor (and none, nurse) and only 1.8 percent of the girls.

The most popular occupation for boys was police officer; nearly 20 percent selected this occupation. For girls, mother was second in popularity to nurse, with about 12 percent choosing it. Thus, of all the girls, approximately 60 percent drew a picture depicting a nurse, a mother, or a housewife.

Table 3:12. Percentage in the Self Condition Selecting Specific Occupations, by Sex and Group

Occupations	Experimental		Control		Females	Males
	Females	Males	Females	Males		
Father	0.0	0.0	0.0	0.9	0.0	0.4
Mother	14.4	0.0	9.3	0.0	12.4	0.0
Athlete	0.6	7.3	0.9	5.2	0.7	6.4
Artist	8.4	2.6	8.4	0.9	8.4	1.9
Professional	4.8	6.0	9.3	15.7	6.6	10.2
Nurse	45.5	0.0	49.5	0.0	47.1	0.0
Doctor	2.4	4.0	0.9	8.7	1.8	6.0
Farmer	1.8	16.0	2.8	8.7	2.2	9.8
Manager	0.0	0.0	0.0	0.9	0.0	0.4
Clerical	1.8	0.0	1.9	1.7	1.8	0.8
Sales	2.4	0.7	1.9	0.9	2.2	0.8
Crafts	1.2	2.6	0.0	1.7	0.7	2.3
Military	0.0	2.6	0.0	2.6	0.0	2.6
Operatives	1.8	12.6	0.0	6.1	1.1	9.8
Service Workers	4.8	11.9	8.4	16.5	6.2	13.9
Police	3.6	19.9	3.7	19.1	3.6	19.5
Laborer	2.4	6.6	0.0	6.1	1.5	6.4
Miscellaneous	0.6	7.9	0.0	0.0	0.4	4.5
"Nonsense"	1.8	3.3	1.9	2.6	1.8	3.0
No response	1.8	1.3	0.9	1.7	1.5	1.5
Total	100% N = 167	100% N = 158	100% N = 107	100% N = 115	100% N = 274	100% N = 266

Reversal Condition Occupational Choices

The occupations chosen in the reversal condition are indicated in Table 3:13, percentages are based on group by gender as well as on gender alone. The table indicates that when girls pretend to be boys, they are more likely to select father than are boys in the self condition (5.5 percent for girls and .4 percent for boys). Boys, when pretending to be girls, were less likely to choose mother than were girls in the self condition (8.6 percent of boys and 12.4 percent of girls). About 31 percent of the boys said they would be nurses if they were girls, which is not nearly as high as it was for girls in the self condition (47 percent). On the other hand, 25 percent of the girls said they would be doctors if they were boys; this would likely correspond to the higher percentage selecting nurse in the self condition. Girls and boys alike (7.7 percent and 6.0 percent respectively) chose police officer, but girls were less likely to see it as a choice in the self condition than were boys in the reversal condition. About 11 percent of the girls said they would be farmers, while about 10 percent of the boys selected this in the self condition (this went as high as 16 percent for the experimental boys).

In conclusion, it appears that in either condition girls are more sensitive to the "parenting" role than are boys. Girls were also more likely to select the health profession in either condition. It appears that a large number of girls view nurses as an option, but not doctor—unless they are pretending to be boys. Popular occupations for boys included farmer, police officer, and the categories of operatives and service workers. Girls were concentrated in the occupations of nurse and mother/housewife. Thus, the spread for boys seems to be quite a bit wider—even when they are pretending to be girls.

Table 3:13. Percentage in the Reversal Condition Selecting Specific Occupations, by Sex and Group

Occupations	Experimental		Control		Females	Males
	Females	Males	Females	Males		
Father	4.8	0.0	6.5	0.0	5.5	0.0
Mother	0.6	9.9	0.9	7.0	0.7	8.6
Athlete	1.8	3.3	2.8	3.5	2.2	3.4
Professional	6.0	4.0	7.5	6.1	6.6	4.9
Nurse	1.8	32.5	0.9	28.7	1.5	30.8
Doctor	24.6	5.3	26.2	4.3	25.2	4.9
Farmer	9.0	2.6	14.0	1.7	10.9	2.3
Manager	0.0	0.0	0.0	0.0	0.0	0.0
Clerical	3.6	2.6	0.9	0.0	2.6	1.5
Sales	3.6	4.0	0.0	2.6	2.2	3.4
Crafts	5.4	2.0	3.7	0.0	4.7	1.1
Military	0.0	0.0	1.9	0.9	0.7	0.4
Operatives	9.6	1.3	0.0	4.3	5.8	2.6
Service Workers	9.6	4.0	13.1	7.8	10.9	5.6
Police	7.8	4.6	7.5	7.8	7.7	6.0
Laborer	2.4	0.7	4.7	0.9	3.3	0.8
Miscellaneous	1.2	0.7	0.0	0.0	0.7	0.4
"Nonsense"	4.8	8.6	4.7	3.5	4.7	6.4
No Response	0.6	7.9	3.7	8.7	1.8	8.3
Total	100% N = 167	100% N = 151	100% N = 107	100% N = 115	100% N = 274	100% N = 266

"Nonsense" Responses and Refusals

After conducting the posttest, the researchers discussed the possibility that boys were perhaps more likely to refuse to participate in the reversal exercise than girls and also perhaps more likely to respond with "nonsense" than girls, if they actually did participate. It was noted that the boys in nearly every class indicated more reluctance to pretending to be girls than girls did to pretending to be boys. Thus, a decision was made to run chi squares based on sex and group and on sex alone for both the self and the reversal condition to examine the differences.

Nonsense Responses

The chi square values did not support any differences in either the self or the reversal condition. Nonsense responses are apparently independent of group-gender combinations. It was observed, however, that there were only 13 total nonsense responses in the self condition, but 30 in the reversal condition (see percentages in Tables 3:12 and 3:13). This suggests that although sex does not seem to be a factor, children are reluctant to even "pretend" to be of the opposite sex.

Refusals

In the self condition the response rate was very high, 98 percent for both sexes. As anticipated, the differences between group or gender were insignificant in this exercise.

In the reversal condition, 98 percent of the females participated but only 91 percent of the males. The chi square analysis of nonrespondents (not including nonsense choices) is included in Table 3:14. The findings suggest that the group-gender combinations differ significantly with respect

Table 3:14. Chi Square Analysis of Nonrespondents in Reversal Condition, Sex by Group

Combination	No Response		Acceptable		Total	
Experimental Female	1	8.42	158	150.58	159	6.90
Experimental Male	12	7.31	126	130.69	138	3.18
Control Female	4	5.40	98	96.60	102	2.78
Control Male	10	5.88	101	105.12	111	3.06
Totals	27		483		510	15.92
	Observed	Expected	Observed	Expected	Observed	X^2

$X^2 = 15.92$

$df = 3$

$p < .005$

to response rate ($x^2 = 15.94$; $p < .005$). The one-way subtable for sex (Table 3:15) is also significant, with $x^2 = 13.51$ ($p < .005$). A one-way subtable by group proved to be insignificant.

It appears, then, that while boys are no more likely than girls to respond nonsensically, they are more likely to refuse to participate in a role reversal situation. This refusal to "pretend" may imply something about the boys' attitudes toward "women's work" or toward being a woman at all.

Table 3:15. Chi Square Analysis of Nonrespondents in Reversal Condition, by Sex

Sex	No Response		Acceptable		Total	
Female	5	13.82	256	247.18	261	5.94
Male	22	13.18	227	235.82	249	7.57
Totals	27		483		510	
	Observed	Expected	Observed	Expected	Observed	X^2

$X^2 = 13.51$

df = 1

$p < .005$

CHAPTER FOUR

ANALYSIS OF THE FOURTH GRADE DATA

This chapter focuses primarily on the statistical analysis employed to bring evidence to bear on the five hypotheses discussed in Chapter Two. A brief descriptive analysis of the data is also included in this chapter.

Percentage Male in Occupation

The dependent variable in this section is the percentage of males in each occupation selected by the students in our sample, in response to two questions: (1) "What would you like to be when you grow up?" and (2) "What *can* you be when you grow up?" This percentage is based on the U.S. Census estimations of the number of men in any given occupation. The relevant independent variables are group, sex and region.

The data were analyzed using multiple regression techniques and the parameters of the full three-way model:

$$Y_{ijkl} = b_o + R_l + G_j + S_k + RG_{ij} + RS_{ik} + GS_{jk} + RGS_{ijk} + e_{ijkl}$$

were estimated and tested for significance.

Percentage Male - "What Would You Like to Be" Condition

Main Effects. The independent variable of group was not found to be significant as predicted by Hypothesis One. However, region and sex differences were both significant in the main effects analysis (see Table 4:1). The obtained F value for sex was significant at the .001 level (F = 392) and for region, significant at the .01 level (F = 6.03). Obviously, the sex difference is the dramatic one. Thus, Hypothesis Two and Three were supported.

Table 4:1. Main Effects for Percent Male in Occupation Selected in Response to the Question, "What Would You Like to Be When You Grow Up?"

Variable		Unweighted Cell Means	df	F[a]	P
Region	Urban	60.46%	1/453	6.03	< .01
	Rural	52.46%			
Group	Experimental	58.46%	1/453	.44	> .05
	Control	54.46%			
Sex	Female	24.20%	1/453	3.92.14	< .001
	Male	88.72%			

[a] An F value of 3.84 is necessary for significance at the .05 level, 6.00 at the .01 level, and 10.8 at the .001 level.

These sex differences are further illustrated in Table 4:2 and Figure 4:1, which show the percentage of girls and boys selecting a given interval of percent male in occupations. Nearly 42 percent of the girls, and none of the boys, selected occupations that are from 0-9 percent male and only 2.5 percent of the boys were in that interval. In contrast, about 70 percent of the boys chose occupations that are 90-100 percent male and nearly 84 percent selected occupations that are composed of 80-100 percent men as compared to approximately 17 percent of the girls selecting occupations in that interval.

Interaction Effects. The region by group interaction was not significant, nor was the group by gender interaction. Consequently, the fourth hypothesis, that experimental females would be more "liberated" with regard to occupational selection, was not supported. However, the region by sex interaction is apparently related to urban and rural girls (refer to Table 4:3). Experimental and control girls were not significantly different with regard to choices (27 percent males in the occupations chosen by experimental girls and 21 percent for control girls). Table 4:4 shows a three-way breakdown of the cell means. A tabulation and analysis of the second occupational choice in response to the "What would you like to be" question revealed a very similar pattern; thus, the analysis is not included.

Percentage Male - "What Can You Be" Condition

Main Effects. As in the previous analysis, the main effects of group and region were not significant, but sex was. The obtained F value for the difference of means based on sex was 289.34, significant at the .001 level. The results of the main effects analysis are summarized in Table 4:5. The percentages in this table are very similar to those in Table 4:1; it appears that "can be" and "would like to be" are interpreted in quite the same way by the respondents.

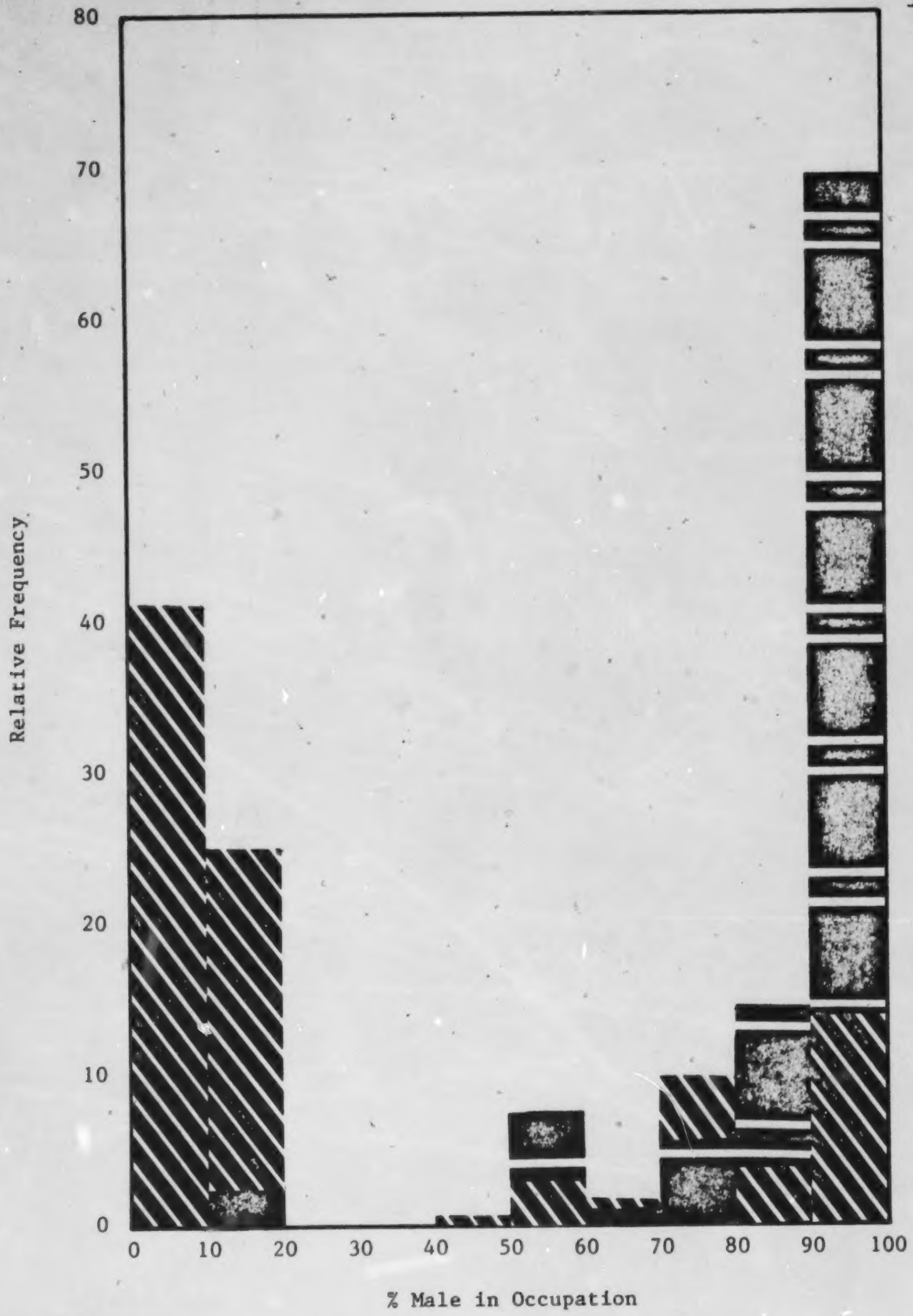

Figure 4:1. Frequency Distribution of Percentage of Males in Occupational Choices, by Sex, in Response to the Question, "What Would You Like to Be When You Grow Up?"

▨ Females

▤ Males

Table 4:2. Percentage by Sex, Selecting an Occupation With a Given Percentage of Males in It - Responses to the Question, "What Would You Like to Be When You Grow Up?"

% Male in Occupation Selected	Female	Male
0 - 9	41.67	0.0
10 - 19	25.47	2.5
20 - 29	0.0	0.0
30 - 39	0.0	0.0
40 - 49	.9	0.0
50 - 59	2.8	7.0
60 - 69	1.9	1.2
70 - 79	9.7	5.8
80 - 89	3.7	14.0
90 - 100	13.9	69.5
Total	100.0	100.0
	N = 216	N = 243

Table 4:3. Two-Way Interaction Effects for Percent Male in Occupations Selected in Response to the Question, "What Would You Like to Be When You Grow Up?"

Variable		Unweighted Cell Means		df	F[a]	P
		Group				
		Experimental	Control			
Region	Urban	63.1	57.8	1/453	.14	>.05
	Rural	53.9	51.1			
		Sex				
		Female	Male			
Region	Urban	33.7	87.2	1/453	11.55	<.001
	Rural	14.7	90.3			
		Sex				
		Female	Male			
Group	Experimental	27.2	89.7	1/453	.03	>.05
	Control	21.2	87.8			

[a] An F value of 10.8 is required for significance at the .001 level.

Table 4:4. Three-Way Interaction Effects for Percent Male in Occupation Selected in Response to the Question, "What Would You Like To Be When You Grow Up?"

Region	Group	Sex	Cell Means
Urban	Experimental	Female	38.23%
		Male	87.93%
	Control	Female	29.23%
		Male	86.43%
Rural	Experimental	Female	16.22%
		Male	91.57%
	Control	Female	13.10%
		Male	89.16%

F = .27
df = 1/453
p < .05

Table 4:5. Main Effects for Percent Male in Occupation Selected in Response to the Question, "What Can You Be When You Grow Up?"

Variable		Unweighted Cell Means	df	F^a	P
Region	Urban	59.10%	1/394	1.16	> .05
		53.55%			
Group	Experimental	59.97%	1/394	2.47	> .05
	Control	52.69%			
Sex	Female	27.37%	1/394	289.35	< .001
	Male	85.28%			

[a] An F ratio of 3.9 is required for significance at the .05 level, and 11.1 at the .001 level.

The gender differences are further elaborated in Table 4:6 and in Figure 4:2. This depicts the percentage of boys and girls selecting occupations with a given interval of percent male. Again, the results are extremely similar to those in Table 4:2 (the corresponding tabulations for "what would you like to be").

Interaction Effects. Of the three two-way interactions, only one was significant at the .01 level, providing support for Hypothesis Four. Experimental girls, on the average, selected occupations that are almost 35 percent male; control girls, as a group, selected occupations that are 20 percent male. Table 4:7 shows two-way interaction effects. As indicated in Table 4:8, the three-way interaction was also significant ($< .05$); this is probably due to the low percentage of males in occupations selected by rural control females as compared to rural experimental females.

"Anything" Responses. In response to the question, "What can you be?" a number of children responded "anything" (N = 44 of 487 respondents) or "almost anything" (N = 16 of 487). We considered the notion that perhaps males would be more likely to say "anything" than females. A post-hoc chi square was run, but the differences based on gender did not prove to be significant.

Descriptive Analysis

Table 4:9 summarizes the percentages of boys and girls in each group selecting a specific occupation when asked, "What would you like to be?" As with the kindergarten analysis, the categories are based on the U.S. Census. This table shows that none of the boys selected "father" as what they would like to be, but about 9 percent of the experimental girls and

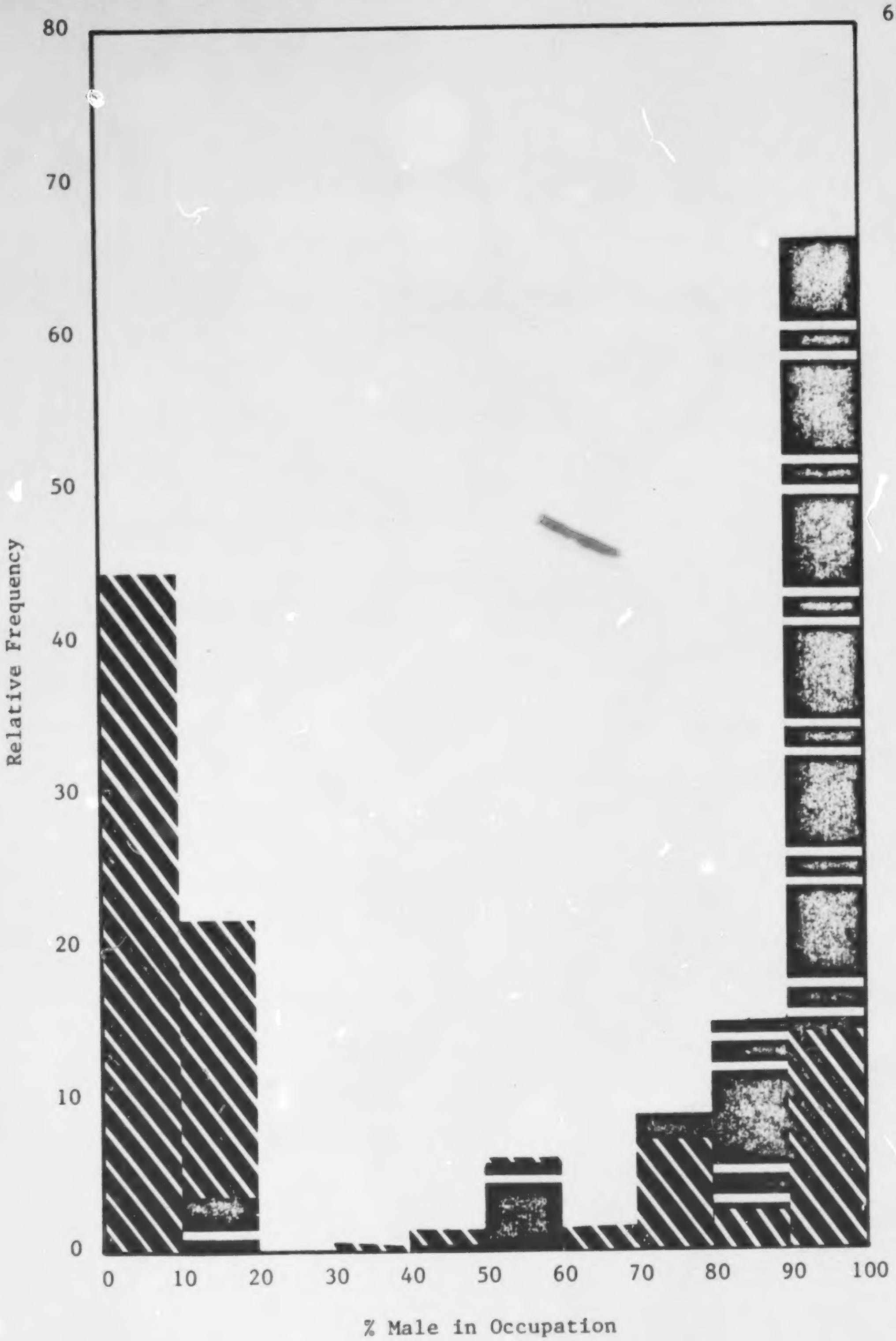

Figure 4:2. Frequency Distribution of Percentage of Males in Occupational Choices, by Sex, in Response to the Question, "What Can You Be When You Grow Up?"

▨ Females

▤ Males

Table 4:6. Percentage by Sex, Selecting an Occupation With a Given Percentage of Males in It - Responses to the Question, "What Can You Be When You Grow Up?"

% Male in Occupation Selected	Female	Male
0 - 9	44.00	0.00
10 - 19	21.99	3.35
20 - 29	0.00	0.00
30 - 39	.52	0.00
40 - 49	1.57	.48
50 - 59	5.75	5.74
60 - 69	2.62	0.00
70 - 79	7.33	8.14
80 - 89	2.09	15.30
90 - 100	14.13	66.99
Total	100.00	100.00
	N = 191	N = 209

Table 4:7. Two-Way Interaction Effects for Percent Male in Occupation Selected in Response to the Question, "What Can You Be When You Grow Up?"

Variable		Unweighted Cell Means		df	F[a]	P
		Group				
		Experimental	Control			
	Urban	60.07	58.13			
Region				1/394	1.03	>.05
	Rural	59.87	47.25			
		Sex				
		Female	Male			
	Urban	30.85	87.34			
Region				1/394	.83	>.05
	Rural	23.88	83.22			
		Sex				
		Female	Male			
	Experimental	34.78	85.16			
Group				1/394	7.04	<.01
	Control	19.97	85.41			

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[a] An F of 6.75 is required for significance at the .01 level.

Table 4:8. Three-Way Interaction Effects for Percent Male in Occupation Selected in Response to the Question, "What Can You Be When You Grow Up?"

Region	Group	Sex	Cell Means
Urban	Experimental	Female	32.93%
		Male	87.20%
	Control	Female	28.77%
		Male	87.48%
Rural	Experimental	Female	36.62%
		Male	83.11%
	Control	Female	11.15%
		Male	83.34%

$F = 4.08$

$df = 1/397$

$p < .05$

Table 4:9. Percentage Selecting Specific Occupations, by Sex and Group. Responses to Question, "What Would You Like to Be When You Grow Up?"

Occupation	Experimental		Control	
	Females	Males	Females	Males
Father	0.0	0.0	0.0	0.0
Mother	9.4	0.0	27.3	0.0
Athlete	0.0	25.0	1.0	25.0
Artist	15.4	6.3	12.1	9.5
Professional	29.1	21.1	23.2	19.0
Nurse	15.4	0.0	16.2	0.0
Doctor	1.7	4.7	4.0	4.3
Rancher/Farmer	0.9	10.9	1.0	6.0
Manager	2.6	0.0	1.0	2.6
Clerical	6.8	0.0	1.0	0.0
Sales	0.9	0.8	2.0	0.9
Crafts	0.0	10.9	0.0	8.6
Military	0.0	1.6	0.0	2.6
Operatives	0.0	6.3	0.0	6.9
Service Workers	10.3	3.1	7.1	0.9
Police	0.9	3.1	1.0	6.0
Laborers	0.0	2.3	0.0	2.6
Miscellaneous	6.8	3.9	3.0	5.2
Total	100%	100%	100%	100%
	N = 117	N = 128	N = 99	N = 116

27 percent of the control girls said "mother" or "housewife" (collapsed into the mother category). Perhaps this suggests that exposure to the toys suggested actual career ideas to girls who might have otherwise responded "mother." This is certainly a substantively significant difference. In the "What *can* you be" condition (refer to Table 4:10), the difference remains, with nearly 18 percent of the experimental girls selecting mother and 27 percent of the control girls. It is curious that both percents increase in the second condition; perhaps this suggests that "What would you like to be" and "What can you be" are, in fact, viewed as different questions. Note also that "athlete" decreases for boys in the "can be" condition, again perhaps supporting the idea that this question is a better indicator of what they see as reality. "Nurse" is considerably reduced from the popularity it held for kindergartners. The percentage ranges from 12 percent to 16 percent. The most popular category for both sexes (second to mother in a couple of cases) is professional. However, 20 percent of the girls selected school teacher in the professional category.

Handouts

A chi square analysis of the effects of receiving handouts (experimental group) as opposed to not receiving them (control group) was not significant. Students who received the handouts were no more inclined to select occupations described in these materials than students who did not receive them (Part II of the questionnaire).

Table 4:10. Percentage Selecting Specific Occupations, by Sex and Group. Responses to Question, "What Can You Be When You Grow Up?"

Occupation	Experimental		Control	
	Females	Males	Females	Males
Father	0.0	1.8	0.0	4.1
Mother	17.8	0.9	32.2	0.0
Athlete	4.0	20.5	2.2	20.4
Artist	14.9	8.0	11.1	6.1
Professional	25.7	20.5	18.9	20.4
Nurse	11.9	0.0	13.3	0.0
Doctor	4.0	4.5	1.1	5.1
Rancher/Farmer	0.0	14.3	1.1	10.2
Manager	1.0	0.0	0.0	2.0
Clerical	2.0	0.0	5.6	0.0
Sales	2.0	0.9	4.4	3.1
Crafts	1.0	8.9	0.0	9.2
Military	0.0	0.0	0.0	1.0
Operatives	0.0	5.4	0.0	7.1
Service Workers	9.9	0.9	5.6	1.0
Police	1.0	2.7	2.2	8.2
Laborers	0.0	3.6	1.1	0.0
Miscellaneous	5.0	7.1	1.1	2.0
Total	100% N = 10	100% N = 112	100% N = 90	100% N = 98

CHAPTER FIVE

CONCLUSIONS

This investigation focused on the influence of nonsexist occupational toys and games on the career aspirations of kindergarten and fourth-grade children. Children in 23 classrooms were exposed to the toys and games for a period of four months. After this exposure, children in these classes were compared with children in 18 control classrooms (where they were not exposed to the toys).

The analysis of the kindergarten data indicated that the effects of region (urban or rural) and group (experimental or control) on the occupational choices were relatively slight. However, the sex differences were highly significant. When asked to draw a picture of what they could be when they grew up, boys selected male sex-typed occupations and girls selected female sex-typed occupations. (On the average, males made up 88 percent of the workers in occupations selected by boys, whereas males made up only 13 percent of the workers in occupations selected by girls.) Kindergarten girls were particularly attracted to two roles, mother (or housewife) and nurse. In the role reversal condition, where children were asked what they could be if they were of the opposite sex, boys were more likely to select occupations with a higher percentage of males than girls did in the self condition (when responding from the view of their own sex). This seems to suggest that either boys are able to break away from sex-role stereotyping more readily than girls (when boys are pretending to be girls) or that they are less willing or able to switch roles and actually cooperate with the exercise. The latter explanation appears more feasible in light of the fact that boys were significantly more likely to refuse to respond in the role reversal condition. That is, boys were more resistant to taking the role of the opposite sex than were girls. This has implications for their attitudes regarding the relative status of the sexes. There were no differences in the response rate in the self condition.

In an examination of the differences in the number of options perceived by group, region and gender, only gender made a statistically significant difference, and then only in the self condition. That is, boys saw significantly more options or alternative occupations than girls.

The fourth-grade analysis of the question, "What would you like to be when you grow up?" suggested that while the effect of group alone did not make a difference in response, there is a joint effect of group and region. Urban females in the experimental group selected occupations that were 38 percent male, while rural females in the control group chose occupations that were only 13 percent male. Region, however, seems to be the major factor, since the urban control girls chose occupations with a higher percentage of males than rural experimental girls (29 and 16 percent respectively). In the responses to the second question—"What can you be when you grow up?"—this interaction by region and group did not show up. However, a sex-by-group interaction was statistically significant; control girls chose occupations that average 20 percent male, and the experimental girls selected ones with an average of 35 percent male. The three-way interaction suggests that this may be due to the difference between rural control girls (11 percent) and rural experimental girls (37 percent).

As with the kindergarten children, but to a lesser extent, fourth-grade males and females seem to be well aware of sex-role expectations. Nurse was not nearly as popular among the older girls, but school teacher emerged as a common choice. The number of boys choosing father in response to any of the questions was very low (none at all in some cases); girls were very likely to choose mother or housewife (as high as 32 percent). It seems that boys do not view father as a very significant role. The question, "What can you be when you grow up?", is more likely to elicit a salaried occupational response from boys than from girls.

The dichotomy observed in the male-female choices suggests that sex-role preferences are established very early. In fact, the younger children are more inclined to conform to stereotypical occupational choices than the older ones. Perhaps older children are looser in their sex-role definitions and thus might be more aware and/or more receptive to looking at a range of alternatives. This prompts the question of whether we actually need to attack the stereotypes at an earlier age than kindergarten (if, in fact, that is even practical or possible) or whether we should postpone even trying until, perhaps, even junior high school. This is a very important question in assessing the most viable juncture for introducing career education.

One problem we encountered in attempting to broaden the perceptions of boys was the utter lack of any toys or games which suggested role reversals for males. There simply are no materials depicting male nurses, clerical workers, dancers, and so forth. In this sense we could have expected to have an impact only on the girls.

Our interest in analyzing the data by using the percentage of males in an occupation as a measure of the perceived "maleness" or "femaleness" of that occupation went beyond the convenience and objectivity provided by utilizing the percentages as a measure of the traditionalness of a role. We also observed that occupations dominated by males tend to provide more status, higher incomes, more opportunities for mobility, promotion and advancement than those occupations dominated by females. "Female" jobs are typically "dead-end," lower-paying occupations (e.g., clerical work). In this sense, we defined selection of jobs with a high percentage of male incumbents as a positive step for females in the direction of achieving equality.

At the conclusion of such a project, the inevitable question, "Why didn't it work?", arises. We feel the data suggest the toys and games had only a limited impact, and although the researchers have discussed this at length, we cannot be certain as to why they were not as effective as we had hoped they would be.

There are various factors that may have influenced the impact of the toys, such as length of exposure, teacher influence, the target population, and competing forms of sex-role socialization. One possibility is simply the time factor; perhaps four months is not adequate. In addition, exposure was contingent on the willingness of the teachers to utilize the materials—the project directors did not have the resources to supervise or monitor exposure. While we felt that the teachers were generally very cooperative and helpful, we cannot be sure that they did not undermine our work in other ways. For example, in conducting the exercise in one of the kindergarten classes, we noted large cut-out drawings of a girl dressed as a nurse and a boy dressed as a doctor (as well as several other sex-role stereotypical career depictions) on a bulletin board. Teachers were not required to do a lesson plan around the materials (although some did) or to use them in any specific way. The only request was that they should allow as much exposure to the materials as they felt feasible. Consequently, we had no feedback as to the other kinds of things happening in the classrooms.

Another aspect is our conservative (anti-ERA), largely rural target population. Perhaps children in a more diverse, less conservative and urbanized area would respond differently. It might well be worth repeating the experiment in such a setting. Preferably, exposure would also be longer and more controlled if it were repeated.

Finally, and possibly more importantly, it seems highly likely that we were competing with some other very potent forms of sex-role socialization from parents, peers, teachers, the media and other traditional toys children have at home. With respect to peers, we recall an incident in a kindergarten class in which a little girl said she would be a doctor when she grew up. The boy sitting beside her responded, in a very matter-of-fact manner, "You can't be a doctor; only boys can be doctors. You can be a nurse."

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APPENDIX A

LIST OF TOYS

Kindergarten Toys

1. Stethoscope
   Company: Creative Playthings
   Cost: $3.50
   The stethoscope can be used to play being a people doctor or an animal doctor.

2. Occupation Puzzles (by Judy)
   4 puzzles: doctor, mechanic, linesperson, pilot

3. Occupation Puzzle (by Playskool)
   1 puzzle: baker
   Company: Playskool
   Cost: $3.00
   A puzzle for children to put together depicting a man as a baker.

4. Robot Card Games (2 sets)
   Company: Fun-da-Mentals
   Cost: $4.00
   Robot may be used to match pairs of occupations or as the conventional card game.

5. Our Helpers Play People
   Company: Milton Bradley
   Cost: $6.00
   Our Helpers is a set of 12 wooden standup figures, including a pair of police officers, construction workers, nurses, doctors, postal workers and business people.

6. Community Careers Flannel Board Set
   Company: Instructo
   Cost: $4.95
   The flannel board set, composed of 27 multiracial characters, depicts all kinds of community workers.

7. Rescue Squad
   Company: Fisher Price
   Cost: $2.75
   The rescue squad is composed of a paramedic and a fire fighter used to imagine all kinds of adventures.

Fourth-Grade Toys and Games

1. Afro-American History-Mystery Game, Volume I (all males)
   Company: Shindana
   Cost: $5.00
   The first Afro-American Game includes puzzles and stories of famous historical personalities with careers in sports, exploring and journalism.

2. Afro-American History-Mystery Game, Volume II
   Company: Shindana
   Cost: $5.00
   The new Afro-American Game includes puzzles and stories of accomplished black women, pioneers, inventors and scientists.

3. Space-Hop Game
   Company: Teaching Concepts
   Cost: $12.95
   Space-Hop is a game on the solar system.

4. Super Sandwich Game
   Company: Teaching Concepts
   Cost: $12.95
   Super Sandwich is a game on nutrition.

5. Robot Card Games (2)
   Company: Fun-da-Mentals
   Cost: $4.00
   Robot is a card game depicting various careers with males and females.

6. Ant City
   Company: Natural Science, Ltd.
   Cost: $8.00
   A city of ants that one may watch working, eating and living. The ants will arrive in the mail at your school in about a month.

7. Erector Set
   Company: Gilbert Toy Company
   Cost: $21.00
   The erector set may be used by all the pupils for designing and building a variety of things.

8. Junior Executive
   Company: Whitman
   Cost: $2.85
   This game teaches children about managing money and relates to careers in business and banking.

APPENDIX B

HANDOUTS FOR EXPERIMENTAL CLASSROOMS

ERECTOR SET

IF YOU LIKED PLAYING WITH THE ERECTOR SET, YOU MIGHT WANT TO READ ABOUT CAREERS RELATED TO CONSTRUCTION.

CIVIL ENGINEER - HE OR SHE **DESIGNS** AND SUPERVISES THE BUILDING OF ROADS, BOAT HARBORS, AIRPORTS, TUNNELS, BRIDGES, WATER SUPPLY SYSTEMS, AND BUILDINGS. PEOPLE IN THIS FIELD HAVE A COLLEGE EDUCATION.

CARPENTER - CUTS, SHAPES, AND PUTS TOGETHER WOOD OR MATERIAL SUCH AS FIBER BOARD. HE OR SHE MAY PUT UP WOODEN BUILDING FRAMES, PUT IN WINDOWS AND DOORS, LAY FLOORS AND BUILD CABINETS OR BOOKSHELVES. HE OR SHE MAY ALSO BUILD FORMS TO HOLD CONCRETE AND CHUTES TO POUR THE CONCRETE. THESE PEOPLE USUALLY HAVE A HIGH SCHOOL EDUCATION PLUS SPECIAL TRAINING.

SPACE HOP

IF YOU LIKED PLAYING SPACE HOP, YOU MAY WANT TO READ ABOUT SOME CAREERS RELATED TO "SPACE" AND TO AIR TRANSPORTATION.

ASTRONOMER - TRIES TO FIND ANSWERS TO QUESTIONS ABOUT THE UNIVERSE SUCH AS HOW IT BEGAN, ITS HISTORY, AND HOW THE SOLAR SYSTEM DEVELOPED. HE OR SHE MAY WORK IN AN OBSERVATORY, A PLANETARIUM, A UNIVERSITY, A GOVERNMENT AGENCY, OR INDUSTRY. PEOPLE IN THIS FIELD HAVE A COLLEGE EDUCATION.

PEOPLE WHO MAKE THE PARTS FOR AIRCRAFT AND SPACECRAFT - THESE PEOPLE USUALLY HAVE A HIGH SCHOOL EDUCATION PLUS SPECIAL TRAINING.

SHEET-METAL WORKER - MAKES PARTS FROM SHEETS OF THIN STEEL BY HAND OR BY MACHINE.

MACHINIST - PLANS THE WORK, SETS UP AND RUNS MACHINES AND HAND TOOLS TO MAKE METAL PARTS.

ASSEMBLER - PUTS THE METAL PARTS TOGETHER. HE OR SHE MAY USE RIVETS, BOLTS, OR HEAT TO JOIN THE PARTS.

ANT FARM

IF YOU LIKED PLAYING WITH THE ANT FARM, YOU MIGHT WANT TO READ ABOUT SOME CAREERS RELATED TO BUGS.

ENTOMOLOGIST - A SCIENTIST WHO STUDIES INSECTS. HE OR SHE LEARNS ABOUT BOTH HELPFUL AND HARMFUL INSECTS-- WHERE THEY LIVE, WHAT THEY EAT, AND ABOUT THEIR LIFE CYCLES. HE OR SHE MAY DO EXPERIMENTS WITH LIVE INSECTS OR LOOK AT DEAD ONES UNDER A MICROSCOPE. PEOPLE IN THIS FIELD HAVE A COLLEGE EDUCATION.

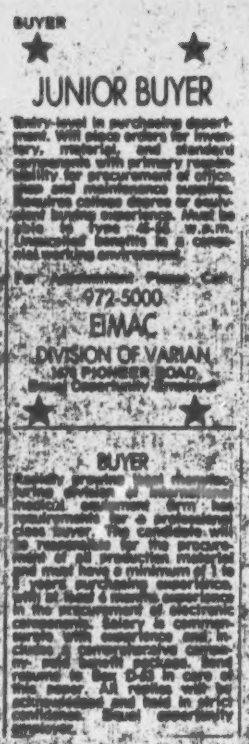
PEST CONTROLLER - PROTECTS OUR HEALTH AND PROPERTY FROM RATS, MICE, AND COMMON INSECTS SUCH AS FLIES AND ROACHES THAT CAN INFECT FOOD AND SPREAD SICKNESS. HE OR SHE ALSO CONTROLS FOR TERMITES THAT CAN EAT AWAY HOUSES. THESE PEOPLE USUALLY HAVE A HIGH SCHOOL EDUCATION.

SUPER SANDWICH

IF YOU LIKED PLAYING SUPER SANDWICH, YOU MAY WANT TO READ ABOUT CAREERS RELATED TO NUTRITION.

NUTRITIONIST - STUDIES HOW THE BODY USES FOOD AND CHANGES IT INTO ENERGY. HE OR SHE LEARNS HOW VITAMINS, MINERALS AND OTHER NUTRIENTS BUILD AND REPAIR BODY TISSUE. HE OR SHE TELLS PEOPLE ABOUT GOOD NUTRITION PRACTICES TO KEEP AND IMPROVE HEALTH. THIS MAY BE SPECIAL DIETS, PLANNING AND FIXING MEALS, AND BUYING FOOD. PEOPLE IN THIS FIELD HAVE A COLLEGE EDUCATION.

COOK AND CHEF - PREPARE AND COOK FOOD, USUALLY IN LARGE AMOUNTS. HE OR SHE MAY ALSO DECIDE WHAT KIND AND HOW MUCH FOOD TO BUY, BUY THE FOOD, PLAN MEALS AND HOW MUCH THEY WILL COST. A COOK MAY HAVE A SPECIAL JOB LIKE A PASTRY, FRY, OR SAUCE COOK. A CHEF SUPERVISES COOKS AND KITCHEN HELPERS. PEOPLE IN THIS FIELD USUALLY HAVE A HIGH SCHOOL EDUCATION.



BUYER

JUNIOR BUYER

972-5000

EIMAC

DIVISION OF VARIAN

BUYER

JUNIOR EXECUTIVE

IF YOU LIKED PLAYING JUNIOR EXECUTIVE, YOU MIGHT WANT TO READ ABOUT SOME CAREERS RELATED TO BUSINESS.

PURCHASING AGENT - BUYS MACHINES, SUPPLIES, AND SERVICES NEEDED BY BUSINESSES. HE OR SHE MUST KNOW THE COST, QUALITY, HOW MANY, AND TIME NEEDED. PEOPLE IN THIS FIELD HAVE AT LEAST A HIGH SCHOOL EDUCATION WITH ON-THE-JOB TRAINING, OR A COLLEGE EDUCATION.

DISPLAY WORKER - DRESSES DUMMIES AND PUTS THEM IN STORE WINDOWS. HE OR SHE ALSO PUTS JEWELRY, FURNITURE, BOOKS AND OTHER THINGS IN THE WINDOWS TO MAKE A SPECIAL DISPLAY. A DISPLAY WORKER MAY USE LIGHTS AND BACKGROUND SETTINGS. THESE PEOPLE USUALLY HAVE A HIGH SCHOOL EDUCATION.

Do you remember that Maggie L. Walker established a Bank and Trust Company? (See Famous Black Women in American History puzzle.)

Do you remember that the toy, and soda pop, and candy and ice cream sellers borrowed money from a bank? (See the Junior Executive game.)

If so, you might want to read about some careers in Banking.

Bank Teller - receives and pays out money, keeps records, cashes checks and does other banking duties.

Bank Clerk - sorts checks, totals deposit and withdrawal slips, and makes out monthly statements for bank customers.

Bank Officers

President - directs the operations of a bank.

Vice-President - may act as a general manager of a bank office or may be in charge of a bank department, such credit or trust.

Bank Treasurer - takes care of the bank finances.

Mortgage Loan Officer - examines applications for loans and looks for loan markets.

Credit and Collection Managers - investigates and judges the character and finances of bank customers who want credit.

Reserve Officer - keeps and figures out the bank's reserve funds.

ERECTOR SET

If you liked playing with the erector set, you might want to read about careers related to construction.

Architect - plans, designs, and supervises the construction of all types of buildings. He or she talks with clients, plans layouts of structures, prepares sketches of buildings, writes specifications, makes scale and full-sized drawings and sometimes models of the building, and oversees construction at the building site.

Civil Engineer - designs and supervises the construction of roads, harbors, airports, tunnels, bridges, water supply and sewage systems, and buildings.

Metallurgical Engineer - develops ways to process and convert metals into useful products. He or she may study the properties of metals to decide which ones would be best suited for particular construction projects.

Urban or City Planner - takes charge of or helps in planning the location of new buildings or public facilities in the development, or redevelopment, of a city or metropolitan area.

Draftsman - prepares clear, complete, and accurate working plans and detail drawings from rough sketches, specifications, and calculations of engineers, architects, and designers. He or she uses knowledge of various machines, engineering practices, mathematics, building materials, and other physical sciences to complete the drawings.

Engineering Technician - helps engineers and scientists. He or she is trained in the technical aspects of a particular area of engineering.

Structural - Steel Worker - erects, assembles, or installs fabricated structural metal products in the construction of industrial, commercial, and large residential buildings as well as bridges and towers.

Sheet-Metal Worker - on construction jobs he or she makes and puts in ducts for ventilating, air-conditioning, and heating systems. He or she makes and puts in many other sheet-metal products such as roofing, siding, and neon signs.

Welder - joins pieces of material, usually metal, by melting them together using heat.

Operating Engineer (Construction Machinery Operator) - drives bulldozers, cranes, trench excavators, paving machines, and many other types of construction machinery. He or she may know how to operate several kinds of machines or only a few.

Construction Laborer - usually is first to arrive on a construction site and the last to leave. He or she sets up and takes down scaffolding, sets braces to support the sides of excavations, and cleans up the mess. He or she also helps unload materials, machinery, and equipment and takes those goods to other construction workers such as carpenters and masons.

Bricklayer - builds and repairs walls, partitions, arches, fireplaces, chimneys, and other structures from brick, concrete, cinder and gypsum block.

Stonemason - builds the stone exterior of structures and sets cut stone in hotels, churches, and other public buildings. He or she works mainly with two types of stone: natural cut stone such as marble, granite, limestone, or sandstone; and artificial stone which is made from cement, marble chips, or other masonry materials.

Carpenter - cuts, shapes, and puts together wood or material such as fiber board. He or she may do rough or finish carpentry. The work includes putting up wooden building frames, installing inside and outside trim, building of concrete forms, pouring chutes and wooden scaffolds, and laying floors. He or she may also build cabinets and bookshelves.

SPACE HOP

If you liked playing Space Hop, you may want to read about some careers related to "space" and to air transportation.

Meteorologist -- studies the atmosphere which is the air that surrounds the earth. He or she describes and tries to understand what the atmosphere is made of, how it changes, and how it affects us on earth. This information aids in understanding and forecasting the weather and climate to help solve many problems in agriculture, transportation, communications, health, and national defense.

Meteorological Technician -- helps meteorologists in the study of atmospheric conditions. He or she calibrates instruments, observes, records, and reports changes in the atmosphere, and assists in research projects and in developing instruments.

Astrogeologist -- studies the structure, composition, and history of the crusts of other planets.

Astronomer -- tries to find answers to questions about the nature of the universe such as how it began, its history, and how the solar system developed. He or she may work in an observatory, a planetarium, a university, a government agency, or industry.

Travel Agent -- helps individuals or groups who want to take trips. He or she helps travelers make their plans for transportation, hotel, and tour reservations, and gets or prepares tickets. He or she works for a travel agency.

Reservationist and Ticket Agent -- help people plan their trips, write tickets, handle money, and help them check in at flight time. He or she works for the airlines.

Ground Operations Personnel -- handle the loading of the aircraft or spacecraft, fueling operations, keep records to make sure the load is properly arranged and is not too heavy.

Air Traffic Controller -- plan arrivals and departures from the "tower." He or she tells aircraft when to land and when to take off.

Ground Radio Operator and Teletypist -- transmit and receive messages between ground station personnel and flight personnel. The radio operator usually uses a radio-telephone. The teletypist operates a teletype machine.

Airplane Dispatcher -- authorizes and directs commercial air flights. He or she reads radio reports from the airplane captains during flights and studies weather reports to determine any necessary change in flight direction or altitude. He or she sends instructions by radio to the airplane captains during heavy storms, fog, periods of engine failure, or other emergencies.

Flight Engineer -- monitors the operation of various mechanical and electrical devices aboard an airplane. He or she is concerned with the condition and the performance of the plane before, during, and after the flight.

Aerospace Industry -- firms that make and put together aircraft, missiles, and spacecraft.

Scientists, Engineers, and Technicians work together to design airplanes, missiles, and spacecraft.

Scientists -- physicists, mathematicians, chemists, metallurgists, and astronomers.

Engineers -- aerospace, chemical, electrical, electronic, industrial, and mechanical.

Technicians -- drafters, engineering, and science.

Production Planners -- plan the layout of machinery, movement of materials, and sequence of operations in making parts.

Technical Illustrators -- help prepare manuals and other technical literature which tells how to operate and maintain aerospace products.

People who make the parts for aircraft, missiles, and spacecraft.

Sheet-Metal Workers -- shape parts from sheets of thin steel by hand or by machine.

Machinists -- plan the work, set up and operate machines and hand tools to make parts.

Assemblers -- rivet, bolt, and solder parts together.

People who inspect and test the parts for aircraft, missiles, and spacecraft.

Inspectors -- using complex machinery they check to make sure that all parts and assemblies were made and put together the way they were supposed to be.

Testers -- make sure all of the parts and systems are working correctly.

ANT FARM

If you liked playing with the Ant Farm, you might want to read about some careers related to insects, animals, soil, and the environment.

Embryologist - studies the development of an organism from a fertilized egg through the hatching process or gestation period. He or she investigates the causes of healthy and abnormal development in organisms.

Zoologist - studies animal life - its origin, behavior, and life processes. He or she may conduct experiments with live animals or examine dissected animals in laboratories.

Entomologist - a special kind of zoologist who studies insects.

Ecologist - studies the relationship among organisms and their environments. He or she is interested in the effects of rainfall, temperature, and altitude on organisms.

Agronomist - develops new growth methods or controls disease, pests, and weeds to improve the quality and yield of crops. He or she analyzes soils to find ways to increase acreage yield and decrease soil erosion.

Soil Conservationist - plans and develops ways of protecting land and natural resources. He or she plans crop rotation, strip cropping, contour-plowing and reforestation, and soil-erosion control.

Parks and Recreational Land Management Technician - supervises outdoor recreational services and facilities in public or private parks, forests, rangelands, mountains, desert areas, and seashores. He or she also protects wildlife and natural resources. The technician must know how to combat insects and control weeds.

Laboratory Animal Care Technician - breeds, raises, cares for, and handles biological research animals. He or she may also help in the care and treatment of pets and other animals in animal hospitals.

Pest Controller - protects our health and property from rats, mice, and common insects such as flies and roaches that can contaminate food and spread sickness. He or she also controls for termites that can eat away houses.

SUPER SANDWICH

If you liked playing Super Sandwich, you may want to read about careers related to nutrition.

Nutritionist - studies how the body uses food and changes it into energy. He or she learns how vitamins, minerals and other nutrients build and repair body tissue. He or she tells people about good nutrition practices to keep and improve health. This includes special diets, meal planning and preparation, and food budgeting and buying.

Dietician - plans nutritious and appetizing meals to help keep people healthy or help them get well if they have been sick. He or she supervises food service workers who prepare and serve the meals. He or she also buys food and equipment, keeps records, and gives advice on good eating habits. Dietitians work in schools, hospitals, schools, and industry.

Food Scientist - investigates the chemical, physical, and biological nature of food and applies this knowledge to processing, preserving, packaging, and distributing food. He or she also develops new kinds of food. Most of these people work in laboratories.

Food Processing Technician - buys, processes, preserves, packages, inspects, grades, and markets every type of food product for the public.

Home Economist - works to improve products, services, and practices that affect the comfort and well-being of the family. He or she may specialize in consumer economics, housing, home management, home furnishings and equipment, food and nutrition, clothing and textiles, or child development and family relations.

Cook and Chef - prepare and cook food usually in large quantities. He or she may also decide what kind and how much food to buy, buy the food, plan meals and how much they will cost. A cook may have a special job like a pastry, fry, or sauce cook. A chef supervises cooks and kitchen helpers.

Baker and Bakery Worker - make, wrap, pack, sell and deliver baked products. He or she may work in an industrial bakery, a small retail bakery or for a restaurant.

Caterer and Caterer Aid - prepare and serve food for special dinners, parties, weddings or other occasions.

Waiter and Waitress - takes customers' orders, serves food and beverages, makes out checks, and sometimes collects money.

Food Counter Worker - serves customers in eating places that specialize in fast service and inexpensive food such as hamburger and fried chicken carryouts, drugstore soda fountains, and school and public cafeterias.

Flight Attendant - is on all commercial passenger planes to help make the passengers' flight safe, comfortable, and enjoyable. Before each flight, he or she makes sure that the passenger cabin is in order, that supplies and emergency equipment are aboard, and that food and beverages are in the galley. A flight attendant greets the passengers as they come aboard, checks their tickets, helps them hang up their coats and put small pieces of baggage under the seats. In the air, he or she answers questions about the flight, serves beverages and precooked meals, and helps to care for small children, elderly, and handicapped persons.

JUNIOR EXECUTIVE

If you liked playing Junior Executive, you might want to read about some careers related to banking and business.

Bank Teller - receives and pays out money, records customer transactions, cashes checks and performs other banking duties.

Bank Clerk - sorts checks, totals debit and credit slips, and prepares monthly statements for depositors.

Bank Officers

Vice-president and Branch Manager - responsible for the activities of a regional bank office, branch bank and often an administrative bank division or department.

Bank Treasurer - responsible for directing the formal financial affairs of a bank.

Mortgage Loan Officer - examines applications for loans and looks for potential loan markets.

Credit and Collection Manager - investigates and judges the reputations and finances of bank customers who are seeking credit.

Reserve Officer - keeps and figures out the bank's reserve funds.

Accountant - gathers, analyzes, and prepares such business and financial records as profit and loss statements, balance sheets, cost studies and tax reports. He or she may specialize in auditing, tax work, cost accounting, budgeting and control, or systems and procedures.

Bookkeeper - analyzes and records all financial transactions such as orders and cash sales. He or she also checks money taken in against money paid out to be sure that accounts "balance," and figure out the payroll for the business.

Purchasing Agent - buys raw materials, machinery, supplies, and services required by businesses or companies. He or she must consider the cost, quality, how many, and time needed.

Advertising Worker - creates and produces advertisements. He or she may also make arrangements for them to be broadcast on radio and television or published in newspapers and magazines. The purpose of advertising is to inform people about a product and to get them to buy it.

Display Worker - arranges mannequins, clothing, merchandise in store windows. He or she often works with a special theme such as a beach setting to display the products. He or she also installs special props, lighting and background settings.

Market Research Worker - collects, analyzes, and interprets information to determine how well a product or service will sell. He or she prepares reports and makes recommendations about customer preferences and methods and costs of distribution and advertising.

Manufacturer's Representative - displays, demonstrates or describes products made by the company which he or she works for to try to sell them to customers. The salesperson visits these customers at their work (wholesale houses, retail merchants, business concerns and institutions).

Retail Salesperson - He or she works in a store and helps people find what they are looking for, may show them how to use different products, takes money or credit card payments, records the sale, and wraps the purchase or arranges for it to be delivered.

Real Estate Agent - represents property owners in selling or renting their property. He or she also helps people to find homes and property to buy.

Insurance Agent - sells policies that protect individuals and businesses against future losses and financial pressures. He or she may help plan financial protection to meet the special needs of a person's family such as insurance protection for an automobile, home, business or other property, life and health. He or she may also help obtain settlement of an insurance claim.

Automobile Salesperson - may sell new or used cars and trucks.

Securities Salesperson - represents individual and organizations in the buying and selling of stocks, bonds, or other securities. He or she works for a brokerage firm, investment banker, or mutual fund.

APPENDIX C

KINDERGARTEN INSTRUCTIONS

KINDERGARTEN

Instructions for self-portrait

Hand out paper and crayons.

"Draw a picture of what you can be when you grow up."

"Put your name on your picture."

[Make sure all pictures are labeled in black with: 1) name, 2) career, and 3) sex of child.]

Collect, put in labeled manilla folder and take 1 hour break.

Instructions for role reversal

Hand out paper and crayons.

"O.K., girls, pretend you are a boy. Draw a picture of what you can be when you grow up."

"Boys, pretend you are a girl. Draw a picture of what you can be when you grow up."

[Make sure all pictures are labeled in green with: 1) na[illegible], 2) career, and 3) sex of child.]

Collect, put in labeled manilla folder - finis.

(Teachers in experimental classes should fill out teacher questionnaires during the excercise; in control classes teachers should fill out control Q's.)

APPENDIX D

FOURTH-GRADE QUESTIONNAIRE

Name________________________________

PART I

A. What would you like to be when you grow up? You may name several things if you like, but list them in the order of their importance to you. Start with what you MOST want to be.

B. What can you be when you grow up?

C. What toy or game, in your classroom, did you enjoy the most this year?

Name ____________________

PART II

A. When I grow up I would like to be . . .
(Choose 3 or less, put a 1 by your first choice, a 2 by your second choice and a 3 by your third choice.)

______ a carpenter

______ a civil engineer

______ an inventor

______ a banker

______ a scientist

______ a librarian

______ a fashion model

______ a cook

______ a nutritionist

______ an artist

______ a homemaker

______ a purchasing agent

______ a display worker

______ a telephone operator

______ an astronomer

______ a sheet metal worker

______ a secretary

______ a mechanic

______ a rancher

______ a truck driver

______ a doctor

______ a nurse

______ an entomologist

______ a pest controller

______ a mother

______ a father

other ____________________
write out

Name________________________

B. Do you have any of the following toys, games or kits at home? If you do, please put a check next to the ones you have.

Board Games

_______ "What Shall I Be?"
_______ "What Shall I Wear?"
_______ Miss America Pageant Game
_______ The Inventors
_______ "The Billionaire"
_______ "Life"
_______ "Careers"
_______ Mystery Date

Toys

_______ Barbie
_______ Action Jackson
_______ Growing Up Skipper
_______ Big Jim
_______ Tiffany Taylor
_______ 6 million dollar man
_______ Bionic Woman
_______ Steve or Bob Scout
_______ Dawn glamour doll
_______ Fighting Furies
_______ "Dusty" sports set
_______ G.I. Joe
_______ Debbie Lawler cyclist

Science and Craft Kits

_______ microscope
_______ telescope
_______ electric train
_______ chemistry set
_______ weight and measurement kit
_______ clock and pendulum kit
_______ crystal radio kit
_______ pottery craft set

APPENDIX E

TEACHER QUESTIONNAIRES

113

TO ALL TEACHERS WITH EXPERIMENTAL CLASSROOMS

CAREER TOYS RESEARCH

Background Information

Name ______________________________

Grade level _______________________

School ____________________________

Section (morning, afternoon) ______________________________

Telephone _________________________

Address ____

Number of boys in your class _________

Number of girls in your class ________

Number of town children _____________

Number of rural children _____________

- -

Reaction to Project

1. My initial reaction to the research was:
   a. concern about the extra work
   b. enthusiasm about the toys and games
   c. neutral
   d. other ____

2. My response by February to the research was:
   a. concern about the extra work
   b. enthusiasm about the toys and games
   c. neutral
   d. other ____

3. My response at the conclusion of the project is:
   a. concern about the extra work
   b. enthusiasm about the toys and games
   c. neutral
   d. others ____

   ____

4. The toy or game I found most educational was ____________________

5. The toy or game I found least educational was ____________________

6. The toy or game I found most enjoyable to use with the pupils was ________

   ____

7. The toy or game I found least enjoyable to use with the pupils was ________

   ____

8. The pupils spent the most time playing with:

9. The pupils played the least with:

Other Classroom Influences (Circle Yes or No)

10. Did your pupils take any special "world of work" field trips? Yes or No

    If yes, where?

11. Did you have any special classroom speakers or visitors who discussed their careers? Yes or No

    If yes, describe.

12. Did you actually play any of the games with your students? Yes or No

13. Did you plan a new unit around any of the toys or games? Yes or No

    If yes, which toys?

14. Did your students use the handouts? Yes or No

15. Did you give the students all the handouts at once? Yes or No

16. Did you discuss the handouts with the students? Yes or No

17. Did you send the handouts home with the students? Yes or No

18. Please note any other relevant information you think we should have.

19. Comments? Suggestions?

We deeply appreciate your assistance with our research.

To all teachers with control classrooms

CAREER TOYS RESEARCH

Background Information

Name____________________________________

Grade level______________________________

School__________________________________

Section (morning, afternoon)______________________________

Telephone_______________________________

Address____

____

Number of boys in your class_____________________

Number of girls in your class____________________

Number of town children_________________________

Number of rural children________________________

- -

Classroom Information

1. Did your pupils hear about the toys and games from the experimental class?

   Yes or No

2. Did any of your pupils accidently happen to play with the toys and games?

   Yes or No

   If so, how many?_______________________

3. Did the pupils pressure you to let them play with the toys and games?

   Yes or No

4. Did your pupils take any special "world of work" field trips?

   Yes or No

   If yes, where ___________________________________

5. Did you have any special classroom speakers or visitors who discussed their careers?

   Yes or No

6. Did you do any special units on careers between December 1 and April 15?

   Yes or No

7. Please note any other relevant inforamtion you think we should have.

8. Comments? Suggestions?

Your cooperation is greatly appreciated!

APPENDIX F

OCCUPATIONAL CODING FORM

CODEBOOK

% Male	Occ. Code		
100	01	A	FATHER
000	02	B	MOTHER - bride, grandma,
000	03		housewife, wash the dishes
		C	PROFESSIONAL
074	107		Accountant
			Athletes
095	04		football
095	05		baseball
095	06		basketball
095	07		swimmer
072	08		roller skater
050	09		iceskater
098	10		astronaut - rocket driver, spaceman
090	86		parachutist
090	87		sea diver
090	88		hiker
090	89		hunter
090	90		horse racer - horse trainer
090	91		racecar driver
090	92		golfer
090	93		tennis player
090	94		motorcycle racer - snowmobile racer
090	95		stunt people
050	96		horse shower
			Artist - writers, artists, entertainers
070	11		artists
070	12		writers
070	13		singer
070	14		glassblower
060	15		marching band
064	16		pianoplayer
017	17		dancer - ballerina
059	18		movie star (actor)
040	19		ride circus horses
030	20		cheerleader, baton twirler
050	21		elephant trainer
040	22		model
097	23		Clergy - missionary, bishop
097	24		Dentist
089	25		Engineer
097	26		contractor - builder, housemaker

			Forestry
096	27		ranger
096	28		treedoctor
095	99		Lawyer
018	103		Librarian
003	29		Nurses
008	102		Nutritionist
092	30		Physicians
099	31		Pilot
085	110		Politician
062	101		Psychiatrist
073	32		Principal (elementary school administrators)
100	33		President
			Teacher
072	97		professor
051	105		teacher - secondary
016	34		teacher - elementary
088	100		Scientist
096	35		chemist
096	36		inventor
078	98		mathematician
095	37		Veterinarian
		D	FARMERS (farm servers, laborers, self-employed)
087	38		feed hay, hay hauler, tractor driver
080	39		Cowboy
		E	MANAGER
082	40		Banker (bank officers and managers)
		F	CLERICAL
002	41		Secretary - office worker, hospital clerk
070	42		Post office worker (postal clerk)
093	43		Mail carrier - mailman
		G	SALES
058	44		Salesman - car salesman, storelady
077	45		Storekeeper
		H	CRAFTSMAN
070	45		Baker

099	47		Carpenter
097	48		Mechanic
098	49		Miller
098	50		Sheetrocker
098	51	I	MILITARY - sailer, army man, soldier
		J	OPERATIVES
072	52		Busdriver
068	53		Cheesemaker
006	54		Dressmaker
095	55		Meat cutter
097	56		Milkman
094	57		Taxi driver
094	58		Ambulance driver
099	59		Truck driver
071	60		Thiokol (industry, manufacturing)
		K	PRIVATE HOUSEHOLD - housekeeper
004	61		Housecleaner
		L	SERVICE WORKERS
069	62		Animal caretakers
007	63		Babytender (child-care worker)
095	64		Barber
010	65		Beautician (hairdresser and cosmetologist)
002	66		Dental assistant
050	67		Exercise people
099	67		Weight lifter
085	106		Florist
032	108		Health technician
060	69		Lifeguard
			Foodservice
011	70		waiter
037	71		cook
064	72		dishwaher
087	73		Janitorial - church cleaner
090	74		Pest control
097	75		Police - swat, sheriff

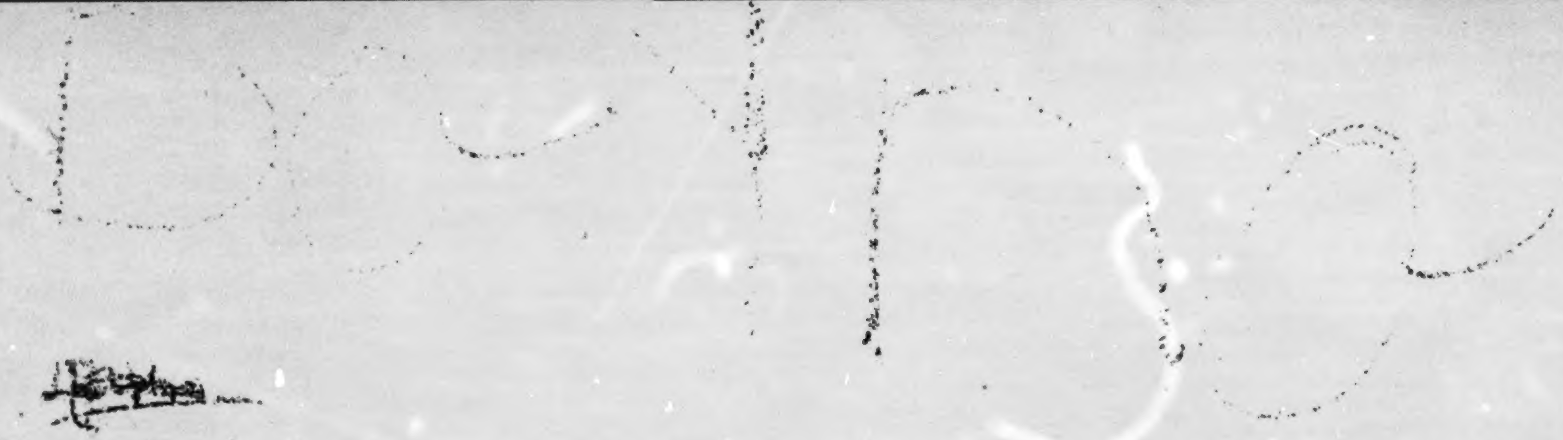
043	76		Crossing guard
080	77		Paramedic
002	78		Stewardess
089	79		Trainman (conductor)
		M	LABORERS
098	80		Construction laborer, workman
096	81		Fisherman
097	82		Gardener - lawn mower, work on golf course
088	83		Gasoline plant, graveyard worker (manufacturing laborer
098	84		Logger (lumberman, woodchopper)
098	109		Miner
099	85		Sewer liner (plumber and pipefitter)
		N	MISCELLANEOUS

Coding Note:

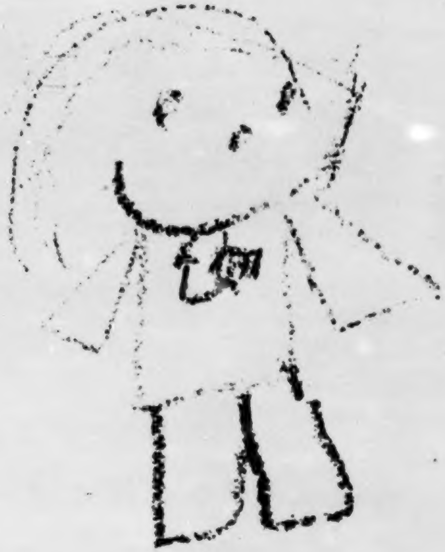
888	00	Nonsense responses
999	00	No response (i.e., no drawings)

APPENDIX G

SAMPLES OF DRAWINGS - KINDERGARTEN



If Dayna were a boy, she says she would be a doctor when she grows up.

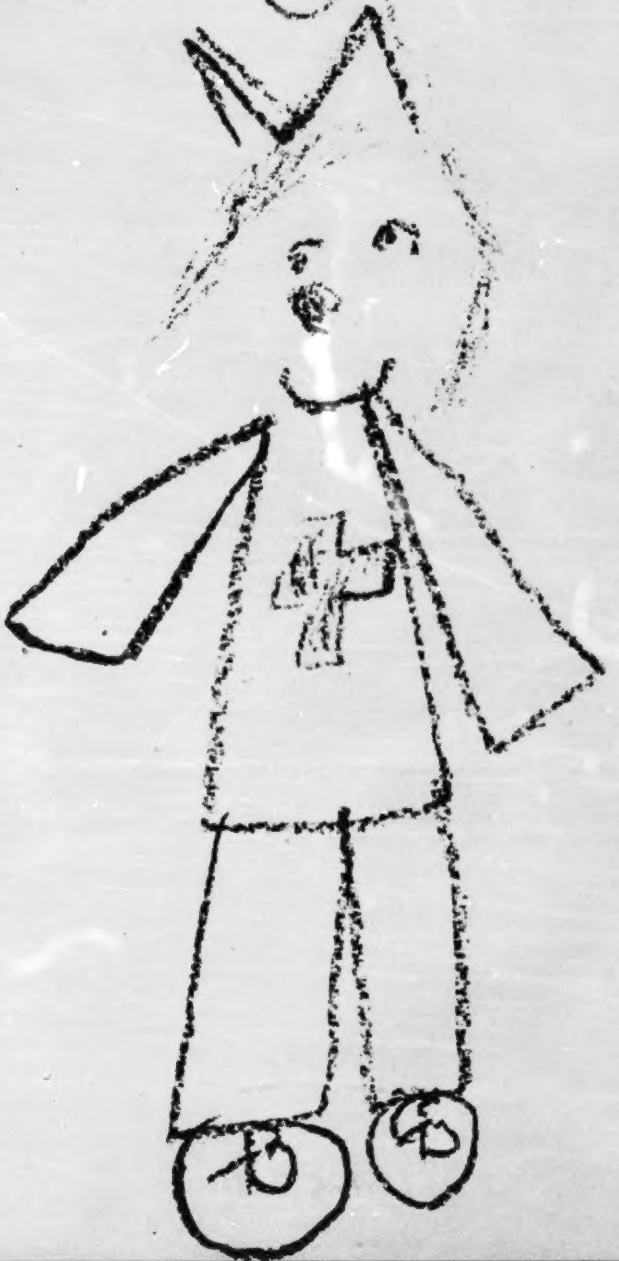


[illegible]

Doctor-E

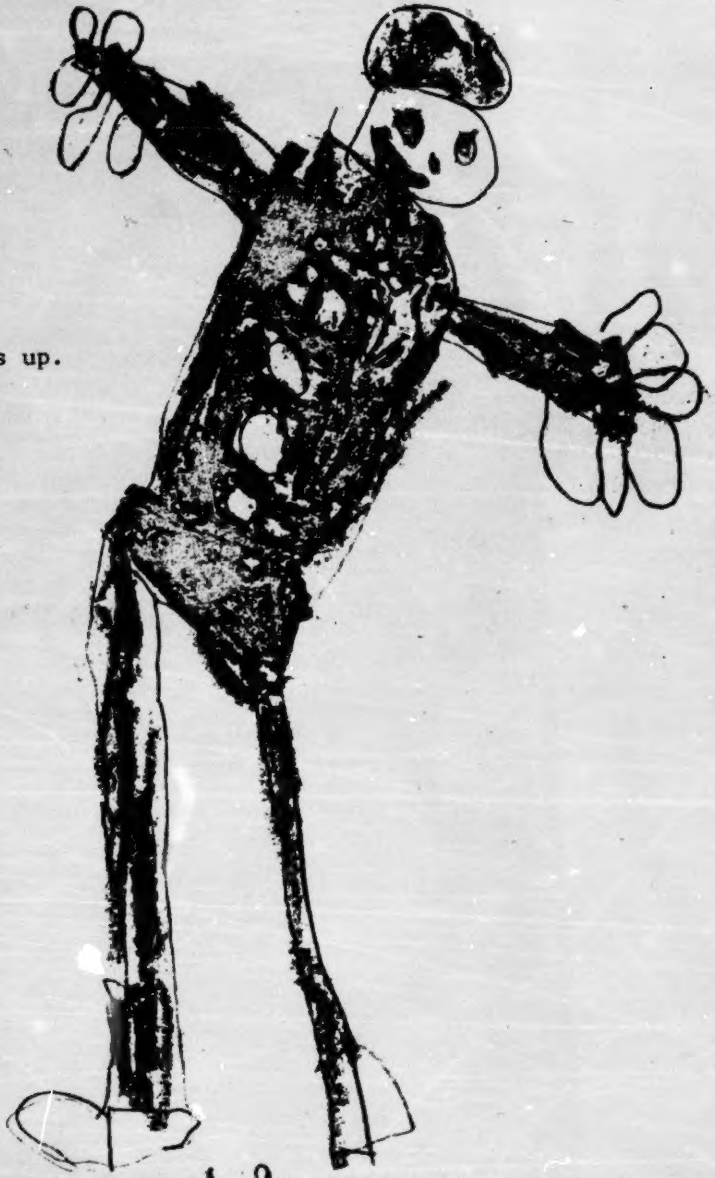
Dayna Lindley

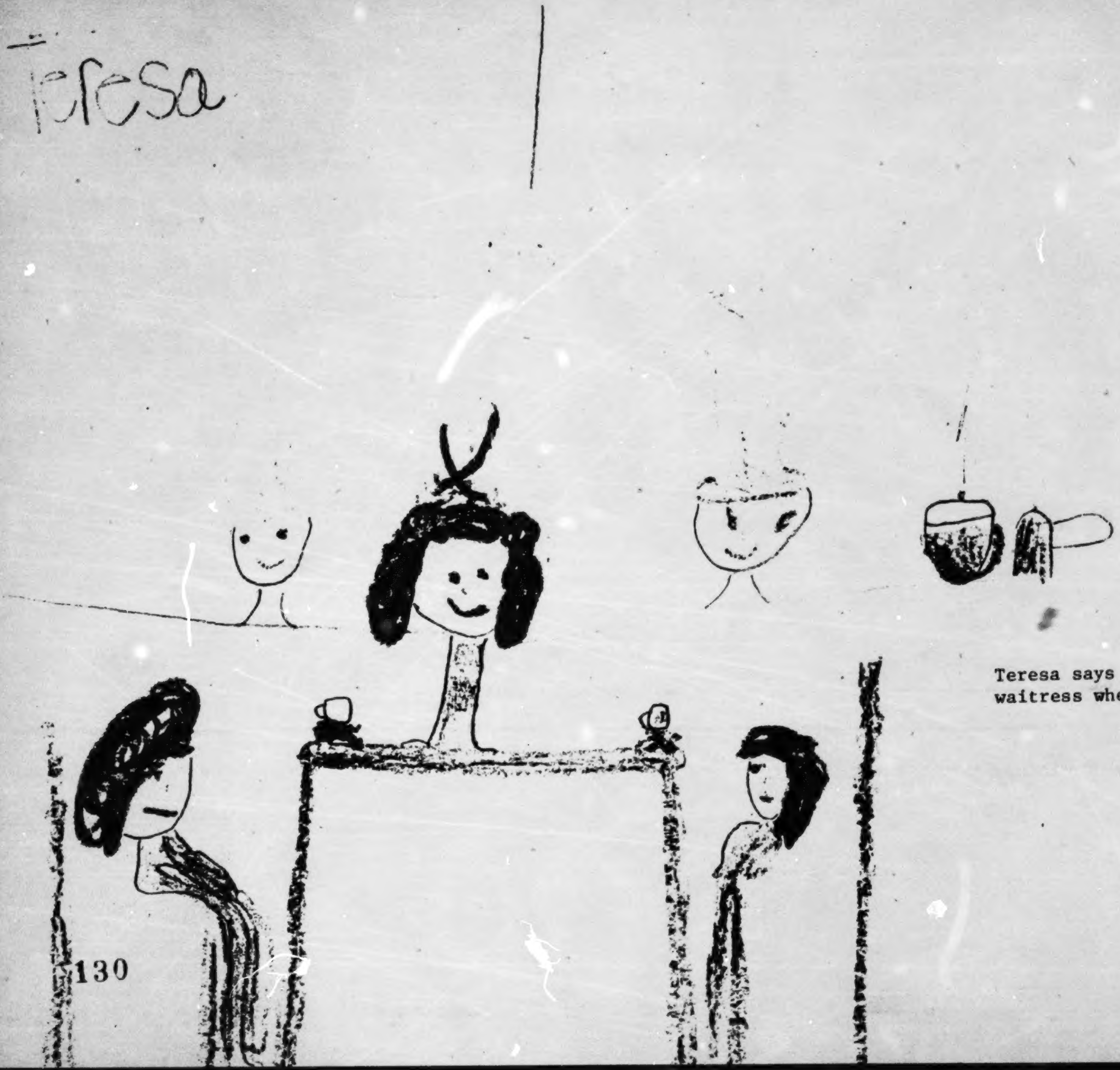
Dayna says she can be a nurse
when she grows up.



Nurse-F

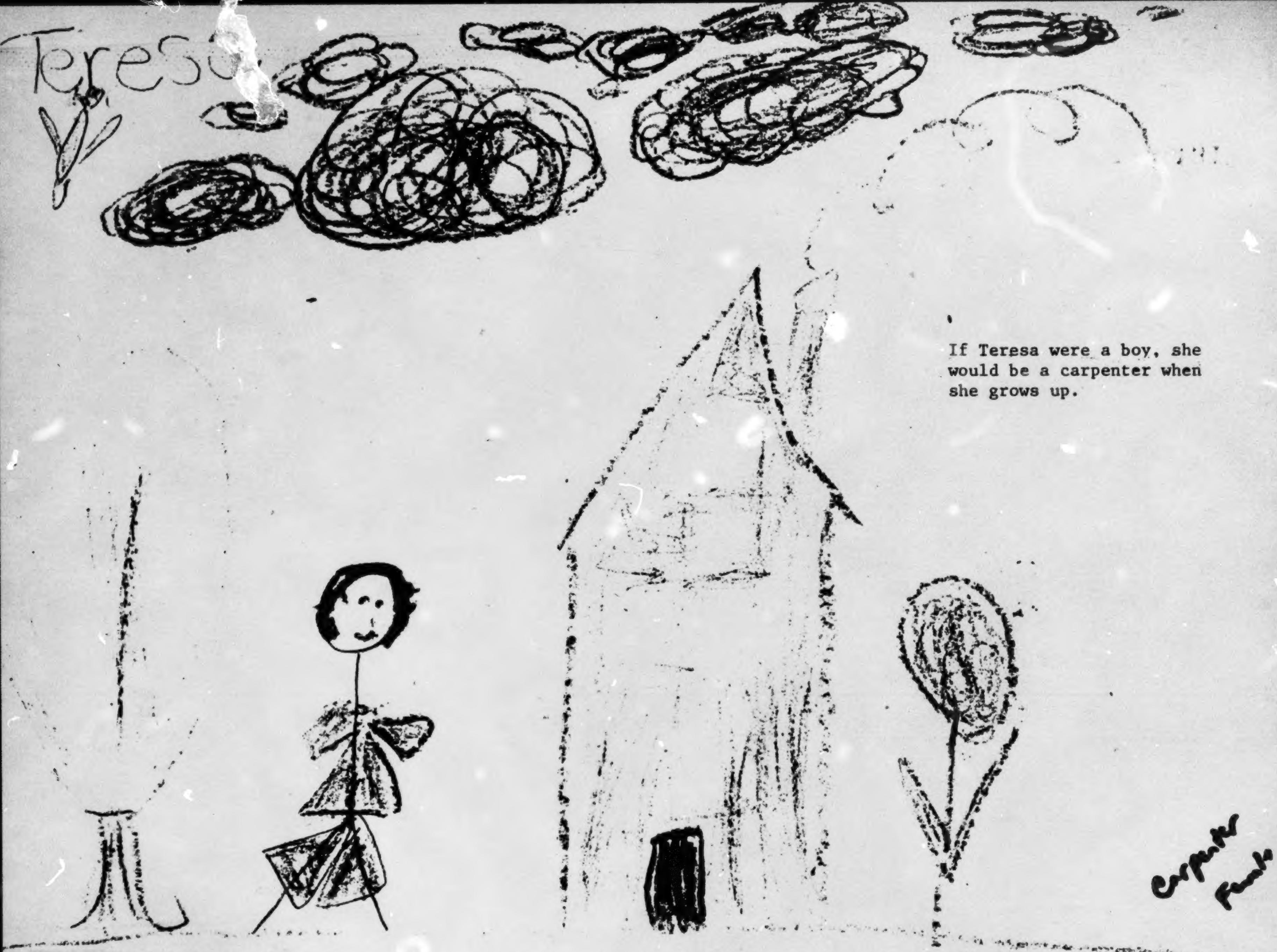
Brett would like to be a police officer when he grows up.





Teresa says she can be a waitress when she grows up.

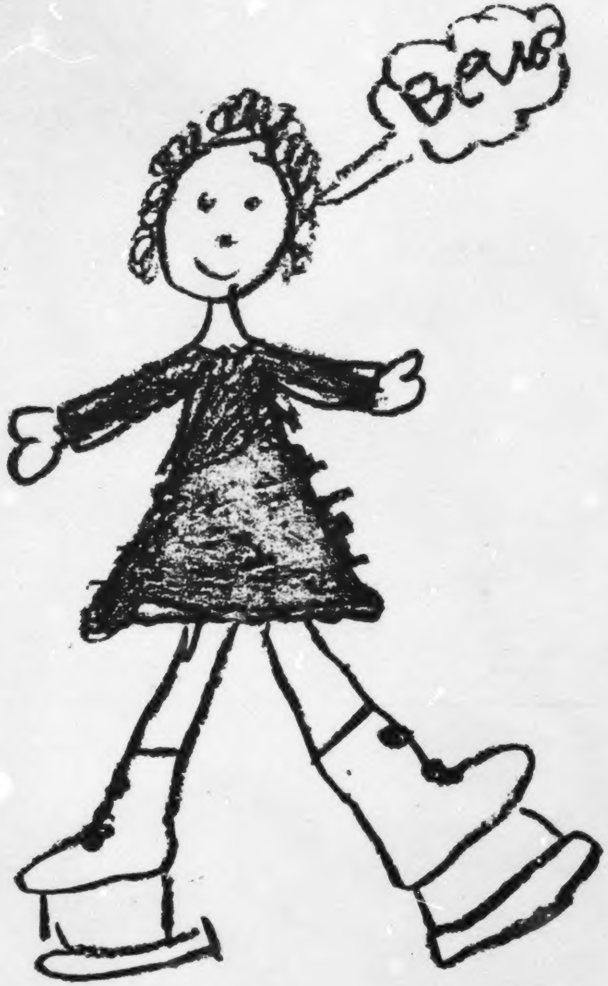
Waitress
Female
K (b



If Teresa were a boy, she would be a carpenter when she grows up.

Carpenter
Female

*JAMIE

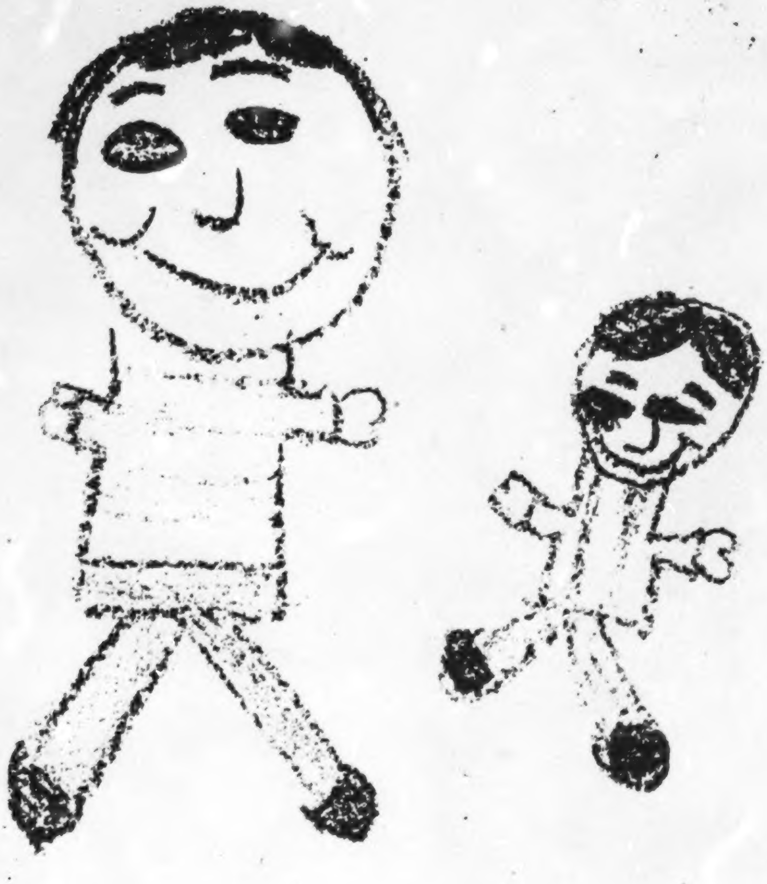


Jamie says she can be an iceskater when she grows up.

Iceskater

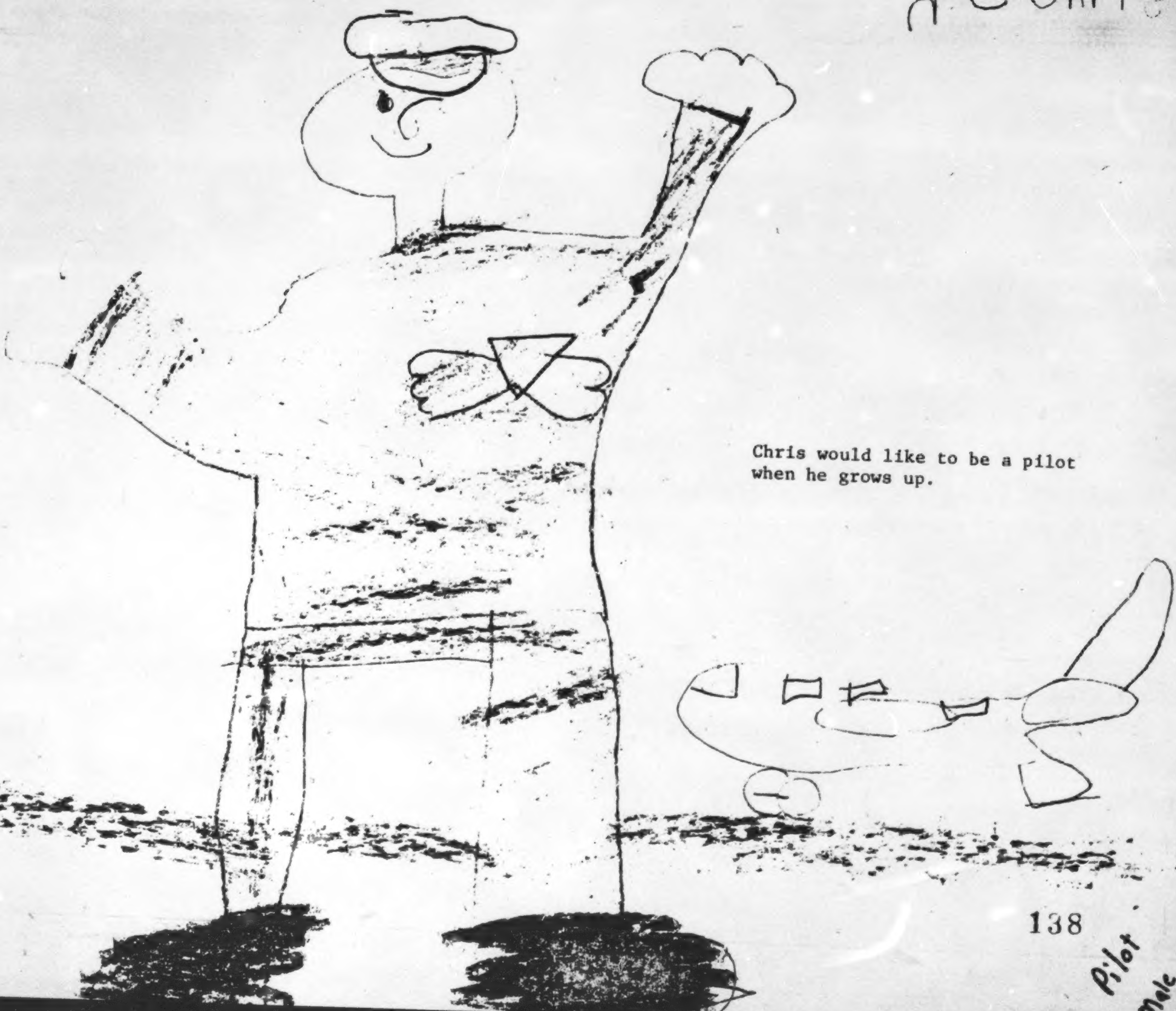
Female

Marni



If Marni were a boy, she would be a farmer when she grows up.

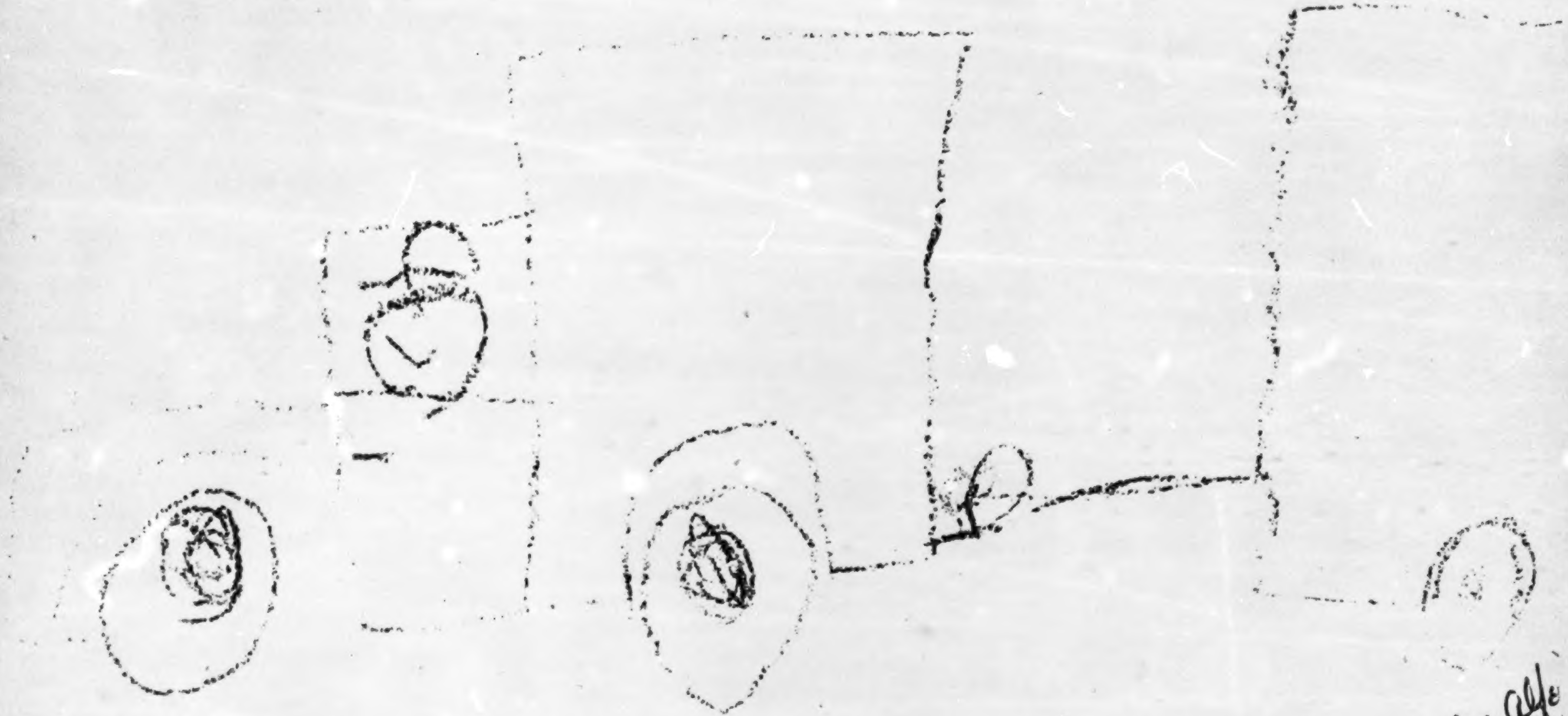
Farmer Frank



Chris would like to be a pilot
when he grows up.

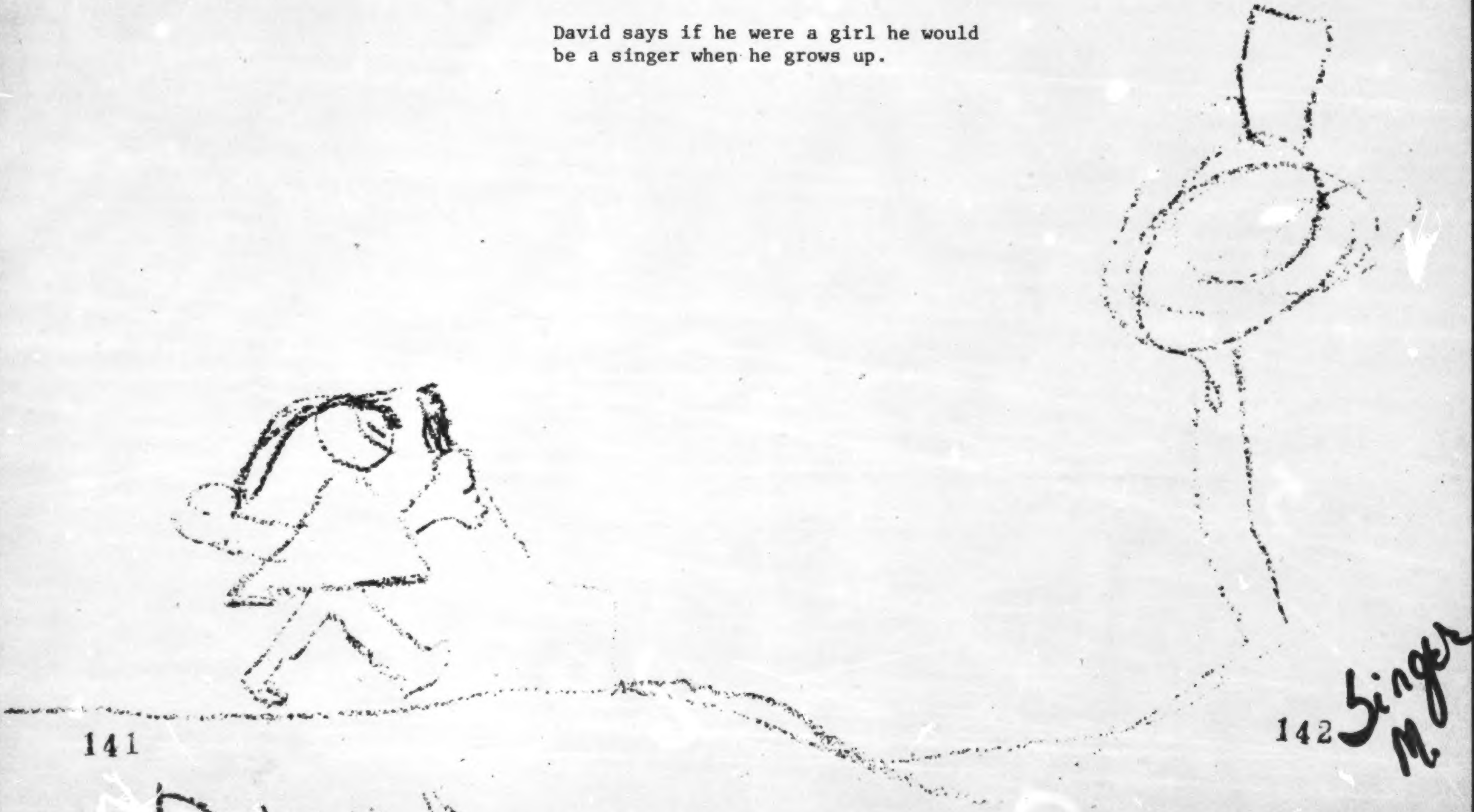
Pilot
Male

David says he can be a
truck driver when he grows up.



David Van Alfe
Truck driver

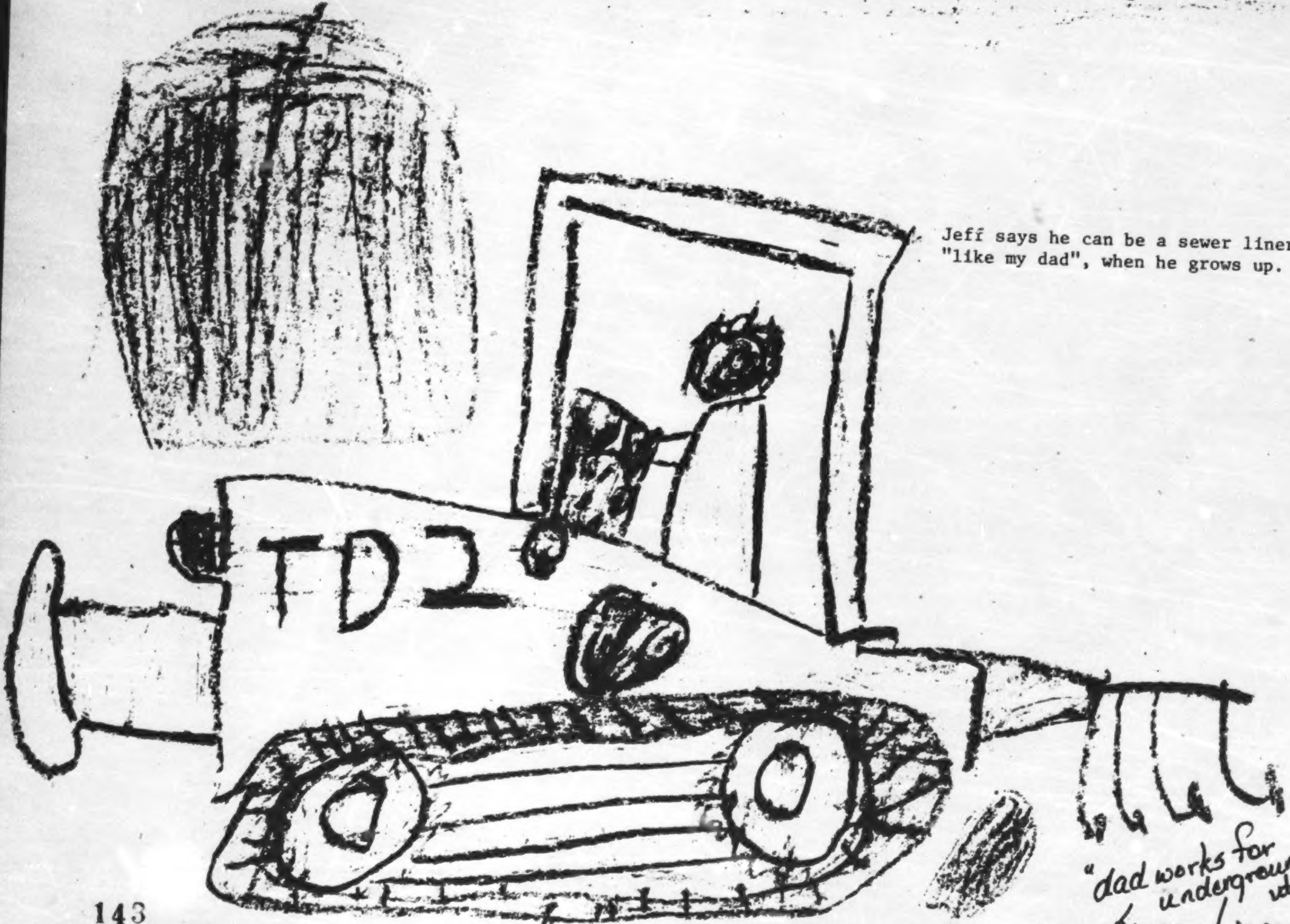
David says if he were a girl he would be a singer when he grows up.



141

142 Singer M

David

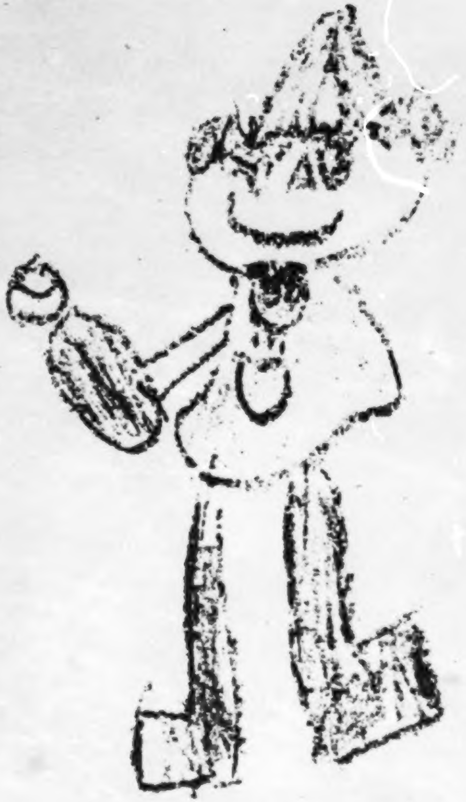


Jeff says he can be a sewer liner, "like my dad", when he grows up.

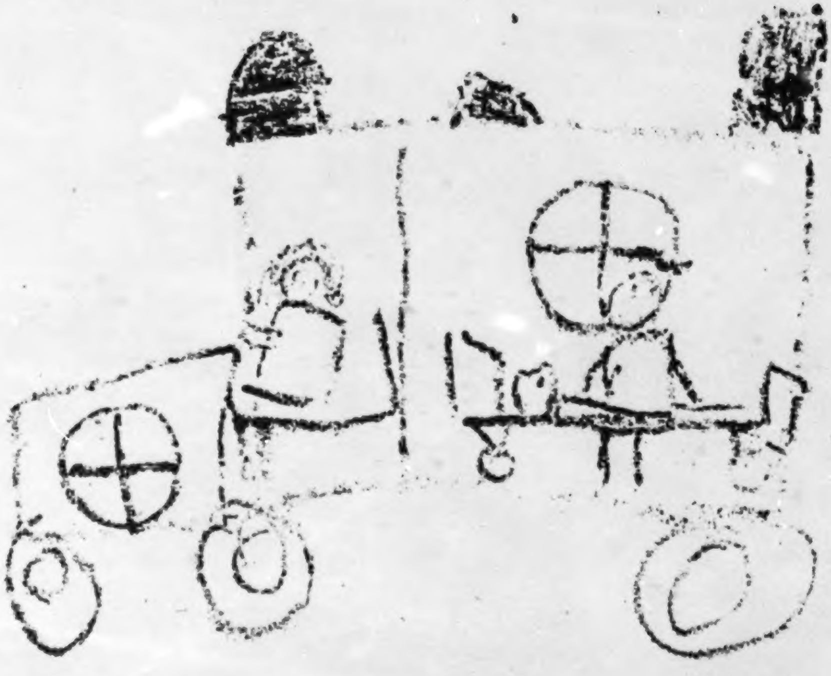
"dad works for underground utili

Sewer Liner

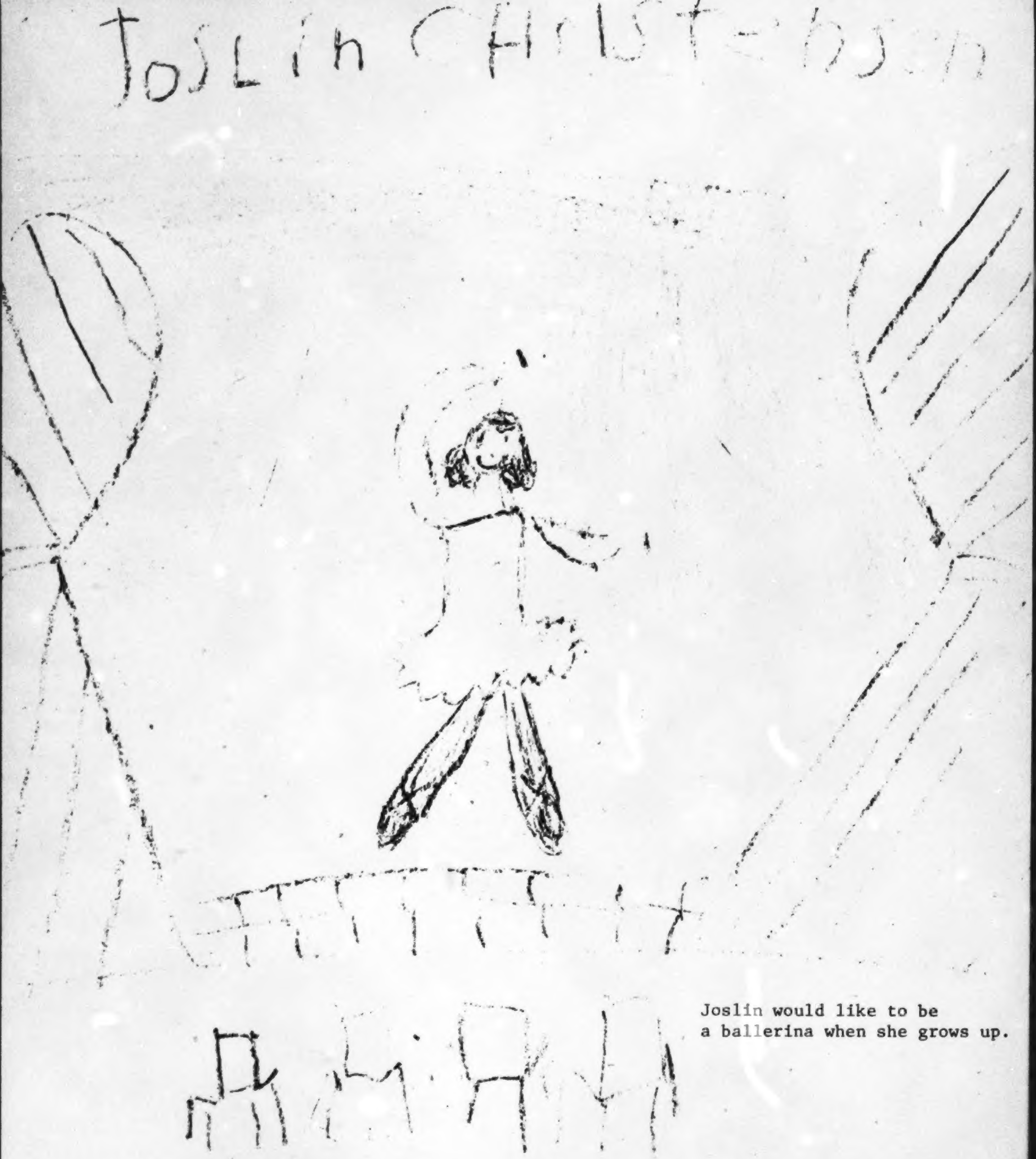
Male



Jeff says if he were a girl he could be a nurse when he grows up.



Nurse


JoSLin CHriStehson

Joslin would like to be
a ballerina when she grows up.

llerina

APPENDIX H

PARENTAL PERMISSION FORMS

Dear Parent:

We are writing to ask for your cooperation in a research project which will examine the relationship between toy preferences and future career aspirations. The study is being carried out in the three Northern Utah counties. We will be conducting exercises in the kindergarten and fourth-grade classrooms. Your child will be asked to do simple activities, on two occasions, such as drawing pictures and filling out short written forms. Your child's name will not be directly mentioned in any of the results of the study. You may withdraw your consent at any time during the project.

This research will be under the direction of Dr. Pamela J. Riley, a sociologist at Utah State University, and Patricia Powers, Professor of Social Work at U.S.U. Please feel free to contact either Dr. Riley or Professor Powers at 752-4100, extension 7662, if you have any questions.

Please sign this form and return it with your child tomorrow.

Thank you!

_____ I approve of my child's participation in this project.

_____ I disapprove of my child's participation in this project.

Signature of One Parent	Phone Number